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THE ESTIMATION OF LACTIC ACID IN BLOOD.¹

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As part of a systematic examination of normal and cancerous material, in particular, blood and tumours, lactic acid had to be estimated. So much has been written of methods devised to this end, that after a review of the many methods described, it was decided to try and adapt one of the macro-methods to the micro-requirements in hand. This has been done, and a brief review of the earlier methods, the adapted method and some results obtained therewith, form the subject of this paper.

Gravimetric Estimation of Lactic Acid.

From Liebig⁽¹⁶⁾ we have the first successful method for the estimation of lactic acid in tissue and meat

extract by weighing as the zinc salt. Numerous other workers followed his procedure, among whom may be cited Bensch⁽²⁾ and Wislicenus.⁽²³⁾ Spiro,⁽²⁴⁾ Araki,⁽¹⁾ Saito,⁽²²⁾ Lockemann, Brysch and Schitterhelm, used and improved the method for use with blood, while Takacs⁽²⁶⁾ and Bohm have adapted the method for use with muscle. Wolf⁽²⁹⁾ states that the gravimetric method is best for blood and that the absorption of blood on a filter paper for extraction is preferable to using a special extractor. W. Ritter,⁽²¹⁾ using the suggestion of Liebig that the zinc salt of tissue lactic acid had two molecules of water of crystallization which were removed by heating at 115° C., calculated from the loss in weight of the zinc salt the amount of lactic acid present. Frankel isolated and ashed the pure zinc lactate and from the amount of zinc oxide calculated the amount of lactic acid. The methods given for the gravimetric estimation of lactic acid are reliable when the acid is present in large amounts. When the acid is not present in

¹This work was carried out under the control of the Cancer Research Committee of the University of Sydney and with the aid of the Cancer Research and Treatment Fund.

large amounts, the accurate solution of the pure dry salt is difficult. A paper by Hill, Long and Lupton⁽¹²⁾ on the estimation of lactic acid gives a good bibliography and discussion of methods.

Titrometric Methods.

Ssobolew⁽²⁵⁾ boiled muscle tissue with water and titrated the extract with normal sodium hydroxide. Ege,⁽⁶⁾ however, made an ether extract, and, after adding phenolphthalein or alizarin red, titrated with sodium hydroxide. It is obvious that acids other than lactic acid have been extracted and estimated, and the methods are thus of little value.

Optical Methods.

An optical method was first developed by Hoppe-Seyler⁽¹³⁾ and Araki,⁽¹⁾ who were the first to isolate quantitatively lactic acid as the lithium salt and to estimate it in a polarimeter. Later the method was employed by Yoshikawa⁽³⁰⁾ and Abderhalde for use with tissue and urine. However, the method is not simple, because of the small degree of rotation of the lithium salt, and because of the difficulties of purification. These disadvantages lead to inaccuracies.

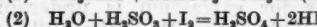
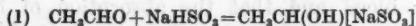
Oxidation Methods.

(1) By Estimation of Carbon Monoxide Evolved.

Using Hubner's method, Meissner and Schneyer⁽¹⁷⁾ treated lactic acid with concentrated sulphuric acid and measured the liberated carbon monoxide volumetrically, and so calculated the lactic acid. Pyffel adapted this method for use with urine, by distilling the urine with concentrated sulphuric acid. To the distillate was added Schiff's reagent; the colour was compared with a standard.

(2) By Estimation of Liberated Aldehydes.

Following the principle of Boas,⁽³⁾ Jerusalem⁽¹⁴⁾ evolved a microscopic method for the estimation of lactic acid. He absorbed the liberated aldehydes in alkaline iodine solution, and from the quantity of combined iodine, calculated the amount of lactic acid. von Fürth and Charnass⁽¹⁰⁾ improved the method by using potassium permanganate as oxidizer, the aldehyde then being estimated by Ripper's⁽²⁰⁾ titration method, in which to the aldehyde solution a known amount of sodium bisulphite is added to "bind" the aldehydes, and then the excess bisulphite is titrated with iodine solution. The reactions follow the well-known equations:



Usually the titration of sulphites by addition of iodine solution leads to low results; however, when the concentration of the sulphite is low (less than 0.04% SO₃) good results are obtained and it is unnecessary to reverse the order of titration. This method has been developed by Clausen,⁽⁵⁾ Scott and Flinn,⁽²³⁾ and by Cottonio and Schaeffer.⁽⁸⁾ For smaller amounts of lactic acid the method has been improved by J. Parnas,⁽¹⁹⁾ Meyerhof,⁽¹⁸⁾ Dux-Low and others.

The Adapted Method.

The method which would meet our purpose had to be suitable for treating not more than five cubic centimetres of blood, while more often three cubic centimetres only were available; of tissue, approximately one gramme was available. Obviously, one was limited to titrometric-oxidation methods. The lately described method and apparatus of Friedmann, Cottonio and Schaeffer⁽⁸⁾ promised well, until trial showed many errors to be unavoidable. These errors were found to be due to loss of acetaldehyde due to oxidation to acetic acid, or leakage from the apparatus (rubber stoppers were particularly unsuitable). Briefly stated, these errors were eliminated by the development of a small all-glass apparatus, extraction of the lactic acid being avoided by use of Folin-Wu tungstic acid protein free filtrate, which was oxidized with a permanganate, sulphuric acid, manganese sulphate mixture. The aldehyde was absorbed in standard bisulphite solution; this was followed by the usual Ripper iodine titration. The bisulphite solution was stabilized as will be shown later.

Protection of the Bisulphite Solution.

Protection of the bisulphite solution was considered by Meyerhof, who used water free of carbon dioxide. The effect of carbon dioxide, air and metallic ions should be thus avoided. Meyerhof also states that protection from light is essential. The effect of copper ions on the sulphite solution was studied, as it has been stated that freedom from these is an essential to stability.

To 100 cubic centimetres of a sodium bisulphite solution (ten cubic centimetres of sodium bisulphite solution was equivalent to 6.05 cubic centimetres of one-hundredth normal iodine solution) 0.5 cubic centimetre of a 10% copper sulphate solution was added and five cubic centimetres were titrated at different times. As is seen from Table I the copper ion is without effect.

TABLE I.
Five Cubic Centimetres of Sodium Bisulphite Solution Titrated with Centi-normal Iodine Solution.

Time (Hours).	Quantity of N/100 Iodine Solution required in Cubic Centimetres.	
	Control.	With added CuSO ₄ .
0	3.025	3.01
1/4	3.00	3.01
1	2.95	2.90
1 1/4	2.90	2.85
3	2.50	2.75
6	2.40	2.30
12	1.90	2.00
24	1.05	1.55
48	1.075	1.275
96	0.750	0.950

Air aspiration is employed in many methods to remove the aldehyde vapour from the boiling flask to the absorption flask, and to stir the liquid. Obviously, when using the Ripper method of titration air cannot be used, since the oxygen present leads to a rapid alteration of the titre value of the standard bisulphite solution.

By making the standard bisulphite solution with water saturated with carbon dioxide, and keeping

it in an atmosphere of carbon dioxide, with light excluded, a stable solution was obtained. A most convenient arrangement for this purpose is shown in Figure I, which, with the legend, is self-explanatory.

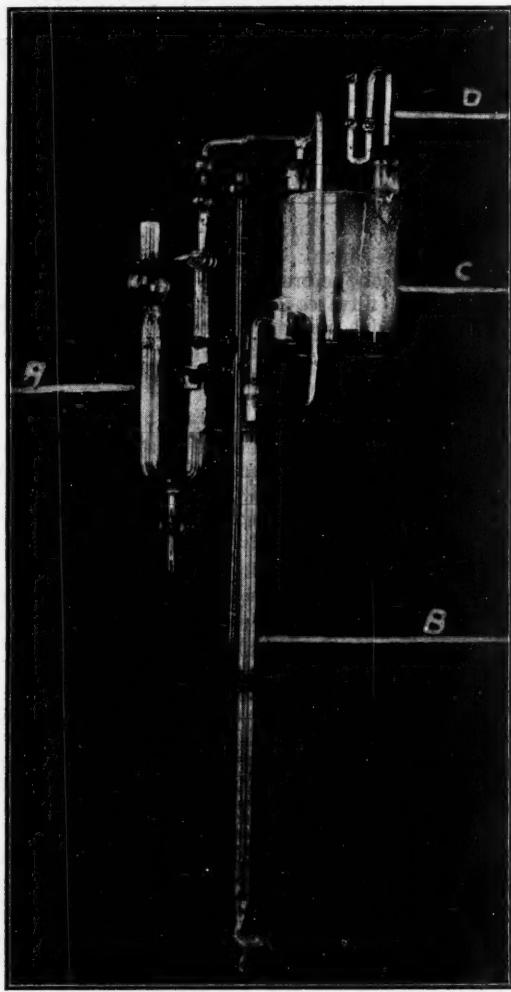


FIGURE I.

"A" = carbon dioxide generator. "B" = storage jar painted black.
"C" = 50 c.m. burette. "D" = mercury pressure valve.
(Photograph by G. J. Burfield.)

The advantage of so treating the bisulphite standard solution in this way is shown in Table II.

The instability of the sulphite solution is thus shown to be in part due to the oxygen present in the air. As will be seen later, when the apparatus described herein is used, all air is removed from the apparatus and is replaced by carbon dioxide. The titration of the bisulphite solution is also done in an atmosphere of carbon dioxide, and repeatable results are thus easily obtainable. With the apparatus described by Cottonio and Schaeffer in which air is drawn through the apparatus, the bisulphite solution being forced into a tower filter with glass beads to give a

large absorption area, repeatable results could not be obtained, even when the direct titration method was used, when the quantity of aldehyde was less than one milligramme. For amounts above this the apparatus was excellent. Hence in the apparatus used here, air is replaced by carbon dioxide. This can be done in either of two ways: (a) To the acid solution in the oxidation flask add drop by drop some saturated sodium bicarbonate solution by means of the dropping funnel; or (b) connect the apparatus to a carbon dioxide supply, as from a Kipp's apparatus, the carbon dioxide being washed with water to remove acid.

TABLE II.
Ten Cubic Centimetres of Sodium Bisulphite Solution Titrated with Centi-normal Iodine Solution.

Hours.	Cubic Centimetres required for	
	Control.	Solution made up with carbon dioxide-saturated water and kept in atmosphere of carbon dioxide.
0	6.05	6.05
1	6.00	6.05
2	5.85	6.05
4	5.60	6.05
8	5.32	6.05
16	4.55	6.05
24 (1 day)	3.00	6.05
48 (2 days)	2.15	6.05
96 (4 days)	1.75	6.05
120 (5 days)	1.55	6.025
192 (8 days)	1.40	6.025

The advantage of using carbon dioxide is shown in Table III, which gives the results for blank determinations using air and carbon dioxide. In the oxidation flask is placed a 10% solution of sulphuric acid, and a little sand to give even boiling, while the absorption takes place in both cases in carbon dioxide-saturated sodium bisulphite solution. The solution is then treated as in an actual estimation.

Apparatus.

The apparatus consists of two tubes with ground joints as shown. "A" and "B" are

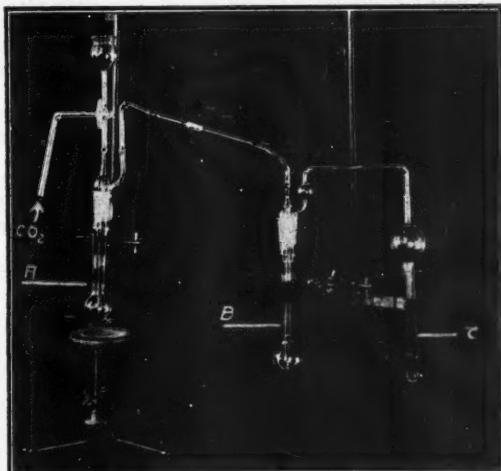


FIGURE II.

(Photograph by G. J. Burfield.)

TABLE III.

Titration Value of Sodium Bisulphite Solution, 10 cubic centimetres of which required 6.05 cubic centimetres of Centi-normal Iodine Solution.

Experiment.	Cubic Centimetres of N/100 I ₂ Solution.	Mean.	Bisulphite Used.	
			As Cubic Centimetre of N/100 I ₂ Solution.	As Percentage of Bisulphite Solution.
Blanks (air)	1	5.975	0.075	1.24
	2			
	3			
	4			
Blanks (CO ₂ atmosphere)	1	6.024	0.026	0.43
	2			
	3			
	4			

15.0 centimetres by 2.5 centimetres in size (six inches by one inch) with a bulb blown on the bottom, and the distance between "A" and "B" is about 30.0 centimetres (twelve inches). In "A" is placed the lactic acid solution prepared as will be described, in "B" a known amount of standard bisulphite solution. "C" is a test tube containing one cubic centimetre of one one-hundredth or one five-hundredth normal iodine solution diluted to ten cubic centimetres with carbon dioxide-saturated water.

Five cubic centimetres of the sulphuric acid manganese sulphate solution are added to "A." The solution in "A" is heated over a glycerine bath (this has been omitted from the figure to show "A" more clearly) and the addition of potassium permanganate solution added through "D" until manganese dioxide separates. The rate at which the permanganate is added should be just sufficient to keep the solution nearly colourless. When the reaction is nearly completed the colour fades slowly. The pink colour should persist for about one minute when the reaction is complete. The boiling is continued for a further five minutes, a slow stream of carbon dioxide being continued also. The bisulphite tube is disconnected, the leading tubes rinsed with carbon dioxide-saturated water and the iodine solution in the test tube added to the contents of the absorption flask; titration is carried out with the standard iodine solution, allowance being made for the iodine in the trap

test tube. The blank figure is subtracted from the first titration before results are calculated.

For blood filtrates it is preferable to use one five-hundredth normal iodine solution, each cubic centimetre of which is equivalent to 0.09 milligramme of lactic acid.

Test of the Apparatus and Accuracy of the Method.

For the purpose of testing the apparatus, zinc lactate was used as a source of lactic acid. The zinc lactate was prepared from Baird Tatlock's (London) lactic acid, using pure zinc carbonate. The salt was recrystallized several times from water, and analysed.

By calculation, for [C₆H₁₀O₆]Zn.3H₂O, the values were as follows: C=24.21%, O=48.42%, Zn=21.98%. The values found by analysis were: C=24.19%, O=48.35%, Zn=21.89%. The water of crystallization, calculated as 3H₂O was 18.15%, and by analysis was found to be 18.06%.

To test the apparatus and also the method a deci-normal solution of zinc lactate in water was prepared. This was diluted to give solutions of a strength of one-thousandth normal, one-five-thousandth normal or one ten-thousandth normal as required. Some of the results are summarized in Table IV.

Thus it was found that excellent and repeatable recoveries could be made with the apparatus.

Table V represents results obtained when the von Fürt Charnass method is used, while Table VI shows a comparison with results obtained by other authors.

TABLE IV.
Results of Tests of the Apparatus.

Strength of Solution.	Number of Cubic Centimetres Used.	Number of Tests.	Theoretical Lactic Acid Content [Milligrammes].	Titration in Cubic Centimetres with N/500 I ₂ Solution (less Blank).		Percentage.
				Theory.	Found (Mean).	
N/1000	2	10	0.18	2.00	1.95	97.5
N/5000	10	8	0.18	2.00	1.94	97.0
N/10000	10	12	0.09	1.00	0.95	95.0
N/10000	5	10	0.045	0.50	0.475	95.0
N/10000	10	6	0.90	10.0	9.95	99.5
N/100	10	2	9.00	100.0	99.75	99.75
N/5 Iodine Solution.						
			32.00	3.55	3.47	97.4
			64.0	7.10	7.00	98.6
			128.0	14.20	14.15	99.6
			160.0	17.75	17.50	98.6

TABLE V.
Results Obtained with the von Fürth Charnass Method.

Method.	Author.	Cubic Centimetres of N/100 Lactic Acid.	Lactic Acid Found.		Mean.	Loss.
			Milligrammes.	Percentage.		
von Fürth Charnass	Bishop	10 c.c.m. = 9 mg.	6.9 7.0 7.8 7.4 7.9 8.0	76.5 77.7 85.5 82.2 87.7 88.8	83.08	16.92
Adapted method	Bishop	10 c.c.m. = 9 mg.	8.8 8.9 8.95 8.93 8.95 8.90	97.5 98.8 99.4 99.3 99.4 98.8	98.8	1.2

Details of Estimation for Blood Lactic Acid.

Solutions Required.

The solutions required are as follows:

- (1) Deci-normal iodine solution, diluted fresh each day to one-hundredth normal or one five-hundredth normal as required.
- (2) One-fiftieth normal sodium bisulphite solution, standardized against iodine.
- (3) Ten per centum sulphuric acid solution containing ten per centum manganese sulphate.
- (4) Washed sand.
- (5) Fresh boiled starch solution (0.5 per centum).
- (6) Permanganate solution (approximately deci-normal), to be diluted to approximately centi-normal as required.

Collection of Sample.

Blood treated with potassium oxalate or sodium fluoride is used. Three cubic centimetres of blood are generally taken.

Precipitation of Proteins.

For the precipitation of proteins, Harden's⁽¹¹⁾ modification of the Folin-Wu⁽⁷⁾ procedure is followed; it is too well known to be given in detail here. There must be no result from a test with sulphosalicylic acid.

Removal of Sugar.

Sugar is removed by the van Slyke⁽²⁷⁾ method in the following way. After removal of the proteins, the solution is centrifuged at high speed for ten to fifteen minutes. Twenty cubic centimetres of the clear fluid are decanted into another tube, and eight cubic centimetres of a 15% copper sulphate

solution, and about eight cubic centimetres of a 10% calcium hydroxide solution, or sufficient to make the solution alkaline to litmus, are added; the volume added must be carefully noted. This is allowed to stand for half an hour.

Distillation.

Before distillation, centrifuge until a clear liquid is obtained. Pipette off ten cubic centimetres into a distillation tube, then assemble the apparatus. Moisten the joint of the distillation flask with concentrated sulphuric acid, and pour about one cubic centimetre of concentrated sulphuric acid into the groove around the neck of the distillation tube. In the absorption tube put a known excess of standard bisulphite solution and surround the tube with a cold water jacket. Allow the exit tube to dip into a test tube containing a known amount of iodine solution as before described. Remove all air in the distillation apparatus with a rapid stream of carbon dioxide, then join on the absorption tube and continue passing a very slow stream of carbon dioxide. Start heating the distillation tube, and run in about five cubic centimetres of the sulphuric acid, manganese sulphate mixture; the temperature of the bath must be raised to about 110° C., during the addition of the permanganate solution as before described. Finally, raise the temperature to 150° C. The distillation should finish in thirty minutes.

Titration.

Disconnect the absorption tube, rinse out the tubes with carbon dioxide-saturated water and titrate the solution with one two-hundredth normal or one five-hundredth normal iodine solution. When near the end point, add about one cubic centimetre of starch solution, and titrate to the usual blue colour, which should last one minute.

TABLE VI.
Comparison with Other Methods.

Author.	Method.	Material.	Amount Used, Milligrammes.	Variation, %.	Recovery, %.	Loss.
von Fürth	von Fürth	Lithium lactate	50-300	86.1-93.1	89.2	10.8
von Fürth	Emden	Lactic acid solution	70-220	91-102	98	2.0
Laquer	von Fürth Charnass	Zinc lactate	2-4	93-97	95	5
Brehme and Brahy	Claussen	Lithium lactate	0.045-0.18	92-95	93	7
Bishop	Adapted von Fürth Ripper	Zinc lactate	0.045-1.00	95-99.6	97.3	2.7
Bishop	Adapted von Fürth Ripper	Zinc lactate	0.0-1.00	97.4-99.6	98.5	1.5

Calculation.

Calculation is made as follows:

Blank = 0.06 c.cm. N/500 I₂ solution.
 1 c.cm. N/500 I₂ = 0.09 mg. lactic acid.
 1 c.cm. NaHSO₃ solution = 0.3025 N/500 I₂.
 After absorption, iodine required for titration = 1.065 c.cm. I₂.
 Sulphite used = 1.060 c.cm. I₂ solution.

Therefore iodine used = (1.06 - 0.06) = 1.00 c.cm. N/500 I₂ for 10 c.cm. de-sugared Folin-Wu filtrate.

But 10 c.cm. Folin-Wu filtrate (= 1 c.cm. blood) were treated with 4 c.cm. of CuSO₄ and (say) 4 c.cm. Ca(OH)₂.

Thus for 1 c.cm. blood we have used $1.00 \times 18/10 = 1.8$ c.cm. N/500 I₂. This value converted to lactic acid is $1.8 \times 0.09 = 0.162$ mg., or 100 c.cm. blood contain 16.2 mg.

For convenience in calculation I plotted the values of lactic acid against one five-hundredth normal iodine solution when ten cubic centimetres of de-sugared Folin-Wu filtrate were used. As the blank value is always determined at each estimation, this has to be deducted from the values given. This graph is not given here, as it is only of special value to the work described in this paper; each worker may easily prepare a similar graph to suit his own requirements, as different standards and volumes of blood filtrate may be used.

Some estimations of lactic acid in a large sample of blood were made, with and without the addition of lactic acid. These results are given in Table VII.

TABLE VII.

Estimations of Lactic Acid in a Large Sample of Blood, with and without the addition of Lactic Acid.

No.	Lactic Acid.	Volume of Blood Used, Cubic Centimetres.	Total Lactic Acid Found (less Blank).	Net Lactic Acid.	Lactic Acid in Milligrammes per 100 Cubic Centimetres.
1	0	3	0.345	0.345	11.50
2	0	3	0.350	0.350	11.66
3	0	3	0.350	0.350	11.66
4	0.5	3	0.847	0.347	11.56
5	1.0	3	1.355	0.355	11.833
6	1.5	3	1.850	0.350	11.66

TABLE VIII.

Estimations of Lactic Acid Content of Blood of Normal and of Cancerous Persons.

Normal Blood:

No.	Cubic Centimetres of Blood Used.	Total Lactic Acid Found (less Blank), Milligramme.	Lactic Acid in Milligrammes per 100 Cubic Centimetres.
1	3	0.45	15.00
2	3	0.35	11.66
3	3	0.38	12.66
4	3	0.318	10.60
5	3	0.48	16.00
Mean			13.18

Cancer Blood:

1	3	0.355	11.83
2	3	0.450	15.00
3	3	0.500	16.66
4	3	0.320	10.66
5	3	0.460	15.33
6	3	0.250	8.63
Mean			13.19

In Table VIII appear results of five estimations of presumably normal blood, and six estimations of blood of persons suffering from cancer. The results indicate that there is no difference between the lactic acid content of normal blood and of blood of cancerous persons.

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MEDICAL MEN AS NOVELISTS.

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SOMETHING very subtle links the practice of Literature to the profession of medicine. What it is I cannot tell, but the fact subsists that if you see a surgeon or a physician meditating alone, there are ten chances that he is busy composing a sonnet, to one chance that an engineer or a bank manager or a brewer is doing the same. It is no new thing: from early times the doctors have been apt to be men of letters.

Thus wrote the eminent critic Edmund Gosse, and certain it is that medicine has lost to literature a very considerable body of distinguished men. A goodly number of practising doctors have won further laurels in the literary field, while others, forsaking medicine, have proved that the practice of medicine is an excellent training for a literary career.

Not only in English literature, but if we may judge by the names of Eugène Sue, Georges Duhamel and Rabelais, of Arthur Schnitzler and Arne Dvorak, of Albrecht von Haller as fine an historical novelist as physiologist, of Jose Rizal, the greatest novelist of the Phillipines, and of Anton Tchekov, though Tolstoi said of him, "His medicine gets in his way: if he were not a doctor, he would be a still better writer," we may say that in all countries a medical training has been found to be a valuable asset in portraying convincing characters and adequate pictures of life as it is.

Of late the number of doctors producing novels of distinction seems to have increased, and much of their work is not unworthy to place beside that of the great medical novelists of the past—alongside the works of Smollett, Goldsmith and Charles Lever.

Tobias George Smollett (1721-1771).

The middle of the eighteenth century saw the birth of the modern English novel, conceived by the genius of Richardson, Fielding, and a Scottish surgeon, Tobias George Smollett. To the latter full honour must be given not only as a distinguished novelist, but as the father of sea stories. He was the first of medical men to write novels.

Tobias Smollett, after attending the Dumbarton Grammar School, was sent in 1736 to study at Glasgow University. For a time his studies were confined to Latin, Greek and mathematics, but soon after, it having been decided that he should become a doctor, he changed over to the medical curriculum.

Among his fellow medical students was William Hunter, later to become eminent as an anatomist.

Smollett remained in Edinburgh till 1739, when, having to fend for himself, he set out to seek his fortune in the Mecca of all ambitious Scotchmen—London. He arrived in London with many introductions and little money, but bringing with him the manuscript of his play "The Regicide" on which he based his hopes of fortune.

After much vain endeavour he could find no market for his play, and his money being nearly exhausted, he passed the examination of the Incorporation of Barbers and Surgeons, and soon after secured an appointment as Surgeon's Mate on board the *Cumberland*, one of the largest of the vessels which set sail in 1740 to reinforce the fleet in the West Indies. He took part in the expedition to Carthagena, and on his return to England left the Navy and attempted to practise as a doctor.

In 1750 he obtained his M.D. degree at Aberdeen, and in 1752 published his only contribution to medical knowledge, "An Essay on the External Use of Water, with Particular Remarks upon the Present Methods of Using the Mineral Waters at Bath, and a Plan for Rendering them more Safe, Agreeable and Efficacious."

But despite his efforts, medical practice was slow in coming—the public mistrust a medical man who essays other arts than his own; and he had to rely on literature for a living.

His "Roderick Random," in which he gives an amusing description of the examination at the College of Surgeons for Surgeon's Mate, appeared in 1748; "Peregrine Pickle," in which he caricatures Mark Akenside, the doctor poet, in 1751; and "Count Fathom" in 1754, all three being written before Smollett had attained the age of thirty-four years.

In 1770 he went to Italy, and when there published his last and best novel, "Humphrey Clinker." Soon after at the age of fifty, worn out with debt and overwork, he died at Leghorn in 1771. Though Smollett was pre-eminently a novelist, he wrote poems of distinction too, and a complete "History of England" from the time of Julius Caesar's invasion down to his own times.

Oliver Goldsmith (1728-1774).

Some men are born "respectable," trained from their birth to acquire riches and think solidly of their own welfare; others are vagabonds from their infancy and the world tries in vain to make them conform to its material ideas. To the latter luckless but lovable group belonged Oliver Goldsmith, who was gifted with a versatility so amazing, that he is the envy of all writers since. As T. P. O'Connor says: "He is perhaps the only man in our literature who is three times imperishably famous, for he is the author of a play that lives, a poem that lives and a novel that lives."

"She Stoops to Conquer" is said to have brought back honest laughter to the stage, and the charm of "Kate Hardcastle" is as alluring as it was in 1773. His two principal poems, "The Traveller" and the "Deserted Village," are characterized by

grace and charm and tender feeling. His greatest achievement is the inimitable "Vicar of Wakefield," considered by many critics, despite its faults, the loveliest novel ever written. It is the first domestic novel in our language.

Essayist, poet, dramatist, novelist, historian, in the words of Johnson's epitaph, "he touched nothing that he did not adorn."

The tale of his life is one long fight against financial difficulties, brought about by his own improvidence.

Born at Pallas, County Longford, he was one of eight children of a poor Irish clergyman. In character Oliver must have taken after his father, for he thus describes him:

He loved all the world and fancied all the world loved him. We were taught to consider all the wants of mankind as our own, to regard "the human face divine" with affection and esteem; he rendered us incapable of withstanding the slightest impulse made by distress. In a word we were perfectly instructed in the art of giving away thousands before we were taught the more necessary qualifications of getting a farthing.

At the age of fifteen he entered Trinity College as a sizar. Those who have visited Dublin will remember Foley's fine statue of Goldsmith which stands with that of Edmund Burke at the gateway of Trinity College. He left there as a Bachelor of Arts, with a competent knowledge of the classics, but with no fixed aim and no money nor prospect of inheriting it. For a while he helped his brother at school teaching. His people thought of making him a clergyman, but he went in a scarlet hunting coat to be examined by the Bishop and was refused ordination.

For a year he was tutor to a family named Flinn, but became tired of teaching. His uncle then came to the rescue and gave him money to study law in London, but Oliver got as far as Dublin where he lost all his money at cards, and had perforce to come home again.

Finally, on the advice of Dean Goldsmith, it was decided that he should go to Edinburgh to study medicine, and the winter session of 1752 found Goldsmith a medical student at Edinburgh. His first few hours after his arrival were spent in exploring the town; when he wished to repair to the boarding house to which he had consigned his luggage, he found he had forgotten the address. He was saved from a sad dilemma by luckily meeting the lad who had taken his trunk for him, and remembered the address. The same irresponsible spirit characterized the whole of his stay in Edinburgh. Though he attended medical lectures and did some useful study, the greater part of his time seems to have been given over to convivial habits and falling in love with the Scotch ladies for whom he professed a great admiration. In a letter to a friend he wrote:

Now I am come to the ladies, and to show that I love Scotland and everything that belongs to so charming a country, I insist on it and will give him leave to break my head who denies it, that the Scotch ladies are ten thousand times finer and handsomer than the Irish.

Towards the end of 1753 his restless disposition reasserted itself, and he wrote to his uncle that he proposed to start in the following February

for Paris, where he expected to be especially favoured as the lectures were delivered in French, and unlike most of his countrymen, he says: "I am perfectly acquainted with that language, and few who leave Ireland are so." Be that as it may, when next we hear of him, he is not at Paris but at Leyden, where he spent a year, for some of the time at least, attending lectures in medicine.

He then planned to travel through Europe on foot, and setting out from Leyden visited Louvain, Antwerp and Brussels; he spent some time in Paris where he attended lectures in chemistry, and from Paris moved on to Switzerland, where he visited Berne, Basle and Geneva. Continuing his journey into Northern Italy he is reported to have spent some time at Padua. During the whole of his journey he earned his lodging and meals by disputing at various universities and colleges and singing and playing the flute at village festivals and in the cottages of the peasants.

After two years, his wanderlust for the time assuaged, he returned to England, and early in 1756 landed at Dover and walked to London. Then began a long struggle with poverty, and to eke out a living he was first assistant to an apothecary, then usher to a school. Some time subsequently an old friend and fellow student at Edinburgh, Dr. Fenn Sleigh, met him and assisted him to start in medical practice in a small way at Bankside in Southwark. About this time he wrote to a friend: "By very little practice as a Physician, and a very little reputation as an author, I make a shift to live." But he had ample time for writing, and soon this was to be his main occupation.

Towards the end of 1757, through the good offices of a friend, a more or less definite promise of an appointment as medical officer to the East India Company at Coromandel was made by the Company. The actual salary was to be £100, but private practice was expected to make it up to £1,000 a year. For some reason or other the project fell through. In 1758 he applied to Surgeon's Hall for qualification for a post as Surgeon's Mate, but was found "not qualified" by the Court of Examiners, probably on account of his lack of proper indentures as an apprentice.

There has been much speculation as to whether Goldsmith ever obtained a degree in medicine: those who are interested in the subject should read a very interesting article by Dr. T. P. C. Kirkpatrick in the *Irish Journal of Medical Science*, April, 1929, on Goldsmith's connexion with medicine. Briefly the facts are these: In an agreement signed on March 31, 1763, with James Dodsley the publisher, to write a book called "A Chronological History of the Lives of Eminent Persons of Great Britain and Ireland," Goldsmith described himself as Oliver Goldsmith, M.B. We can be reasonably sure that as he described himself a Bachelor of Medicine on an official document, he had been granted that degree.

Again, in *Jackson's Oxford Journal* for February 18, 1769, it is announced:

Yesterday Oliver Goldsmith, Esq., Bachelor of Physick in the University of Dublin, author of *The Traveller*, a Poem,

and of The Present State of Polite Learning in Europe, and of several other learned and ingenious performances, was admitted in congregation to the same Degree in this University.

Dr. Kirkpatrick's conclusion is that there is not any sufficient reason for doubting that Goldsmith was a Bachelor of Medicine of Dublin: probably the degree was granted *in absentia*.

In 1765 Goldsmith made another effort to earn an income by medical practice—this time as a dignified physician on a much grander scale than his earlier attempt at Bankside. But again patients were lacking, and after a few months he gave up his connexion with medicine for ever.

Unfortunate as Goldsmith was in his medical career, the profession is indebted to him for a very able review in 1761, calling notice to a Latin treatise just published in Vienna by Leopold Auenbrugger, M.D., on "A New Invention for the Discovery of Latent Disorders in the Breast, by Striking the thorax." This essay of Goldsmith entitled "Auenbrugger's Discovery of Percussion" has recently been published (1927) in a volume of "New Essays of Oliver Goldsmith," edited by Robert S. Crane.

A gambler from boyhood, vain, extravagant, improvident and always in debt, when he chanced to earn money it usually went to help someone in distress; his faults are largely those of a generous open-hearted man, and he remains one of the most delightful figures in our English literature.

He had all the imprudence and versatility of the Irishman with his faults and all his virtues too. For the greater part of his life he struggled against perpetual monetary difficulties, but he never learned financial sense. When his rent was so long in arrears that his landlady called in the sheriff's officer, Goldsmith sent a messenger to Johnson. Sending along a guinea, Johnson promised to come as soon as possible, only to find when he did arrive that Goldsmith had changed the money for a bottle of Madeira, and was joyfully telling the landlady his candid opinion of her. Putting aside the bottle, Johnson inquired how money could be procured, and finding a novel ready for the press, took it along and persuaded a publisher to give him sixty guineas for "The Vicar of Wakefield."

As a student, on one occasion, he gave all his bed clothes away to a family in distress, and was found by a friend on a winter's night trying to keep warm in the feathers of his mattress. At Edinburgh he narrowly escaped arrest for debt, through backing a bill for a friend and compatriot. When he was an apothecary's assistant, he was accustomed to sit on the doorstep of his lodging, telling stories and playing the flute for the poor children.

In order to present himself favourably before the examiners at The College of Surgeons, he bought a new suit. Four days after the examination he pawned it, at his landlady's entreaty, to deliver her husband from a debtor's prison, and himself narrowly escaped arrest at the hands of an irate tailor, for the suit was not paid for.

Always much too generous for a material world, he spent much faster than he earned and died two thousand pounds in debt. But the poor among

whom he lived and to whom he was so good, loved him; and when he died "on the stairs of his apartment there was the lamentation of the old and infirm, and the sobbing of women, poor objects of his charity, to whom he had never turned a deaf ear."

By the side of the Temple Church, Goldsmith lies buried. A physician whose mind was anything but forensic in its outlook, lies buried in the abode of lawyers—a stranger in a foreign land. One could wish that the men of his own profession had seen that his grave should be somewhere in precincts sacred to physicians, so that those who wished to pay him homage need not wander into legal ground.

Dr. John Moore (1730-1802).

Dr. John Moore was the author of a novel "Zeluco," which in the early part of the last century attained much popularity. Born at Stirling in 1730, Moore studied medicine at Glasgow University and served his apprenticeship to a Dr. Gordon, a noted practitioner of that city. Thereafter he received an appointment as Surgeon's Mate in the Army, and served during the campaign in Flanders.

Leaving the Army at the conclusion of peace, he studied in London and Paris before returning to Glasgow, where he joined his former master and tutor, Dr. Gordon, as a partner in practice. He obtained his M.D. degree (Glasgow) and until his fortieth year was engaged in practice at Glasgow.

During this period he had been medical adviser to the Hamilton family, and when in 1772 the future Duke of Hamilton, a delicate lad, was obliged to travel for the sake of his health, Moore was invited to accompany him.

For five years they travelled through Europe, and Moore's observations on society and manners in various continental countries provided him with material for two very readable volumes of travel.

Returning in 1778, Moore entered practice in London, devoting his leisure time to literature except for a brief interlude in 1792 when he visited Paris, but was soon obliged to return by the unsettled state of that country in the throes of the French Revolution. He pursued his labours in practice and literature till his death in 1802.

The publication of his volumes of travel having established his literary reputation, Moore searched for further literary fields to conquer. He had been a travelling companion of Smollett and greatly esteemed him as a friend. Stimulated by contact with the master novelist, he turned his hand to the novel, and in 1789 published "Zeluco" a well written story which enjoyed much popularity for a quarter of a century, and, though no longer read, is worthy of mention as one of the first novels to appear, in which each chapter is preceded by a quotation—a practice in great vogue since.

His second story "Edward" appeared in 1790, and a third styled "Mordaunt" in 1800.

Though Dr. John Moore was highly esteemed in his day, the name of his eldest son is now far better known, that of Sir John Moore whose death in the

hour of victory at Corunna in 1809 has been commemorated in the fine poem of Wolfe commencing

Not a drum was heard, not a funeral note,
As his corse to the ramparts we hurried;
Not a soldier discharged a farewell shot
O'er the grave where our hero we buried.

Charles Lever (1806-1872).

With "his rollicking Irish humour," Charles Lever is one of the best of the Irish novelists in portraying Irish character and Irish themes, particularly the happy-go-lucky irresponsible type of Irishman. Born at Dublin in 1806, he graduated in medicine and for a few years combined both writing and the practice of medicine. But in 1842 he relinquished entirely his connexion with the healing art and devoted himself to literature.

In 1858 he was appointed Vice-Consul at Spezzia, where he spent some happy years in a not too onerous post till in 1867 he was promoted to the Consulship at Trieste; there, after five unhappy years overburdened with work and missing the social intercourse he loved, he died in 1872.

Imprudent, like Goldsmith, he was always in debt and wrote his novels to pay his debts, and as his debts were often pressing, often wrote too much and too quickly. Sociable, hospitable, with a gift for making friends, his faults are easily forgiven. Extravagant, fond of horses, and an inveterate gambler at cards, he was perpetually in need of money, despite the fact that his books had a wide circulation and sold well. "The Knight of Gwynne" brought him nearly £3,000; "Jack Hinton," £1,300. His earnings between 1837 and 1872, his working life as a novelist, are said to have been £50,000.

His best known and probably the most popular novels, "Harry Lorrequer" and "Charles O'Malley" were written in his earlier years. The least read by the public, though the one that Lever himself thought his best, "The Dodd Family Abroad," was the work of his maturer years.

Oliver Wendell Holmes (1809-1894).

Oliver Wendell Holmes was not only a delightful essayist—the author of "The Breakfast Table Series" from which as Osler says: "You can glean a philosophy of life peculiarly suited to the needs of a physician." He was a poet whose verse fills three volumes; and he was the writer of three novels, "Elsie Venner," "The Guardian Angel" and "A Mortal Antipathy" in which his medical and psychological knowledge is revealed.

The son of a Calvinistic clergyman, he was born in 1809 at Cambridge, Massachusetts; in 1825 he entered Harvard University, graduating in 1829. As an undergraduate he had begun the writing of verse, but he left Harvard with no thought of achieving literary distinction and still in doubt as to the profession he would adopt.

For a year he studied law, at the same time dabbling in literature, but he found the law not to his taste. In "The Professor" he says:

The business of the lawyer is as unsympathetic as Jack Ketch's. There is nothing humanizing in their relations with their fellow creatures. They go for the side that retains them.

So after a year he forsook the study of law and turned to medicine. After completing the early part of his medical studies, he decided to complete his course in Paris. His father was by no means a wealthy man, but luckily his mother had private means and she provided him with the money for his project.

In Paris he worked with enthusiasm at his medical studies under such masters as Louis, Lisfranc, Larrey and Dupuytren. After completing his course and making a tour of Italy, he returned, filled with the highest professional ambitions, to Boston in 1836 to practise his profession.

As a general practitioner he was not a brilliant success. Sociable, brilliant in conversation and guilty of writing poetry, people seemed to think he lacked the more serious qualities expected of a physician. The story is told that once when asked to divide his practice, he replied with regret that he was unable to entertain the idea as he had only one patient. Nevertheless, he wrote some medical essays of value, and from 1835 to 1838 was Physician to the Massachusetts General Hospital.

In 1838 he was appointed Professor of Anatomy at Dartmouth College, and remained there till in 1840 he married, and once more settled down in practice. For the next seven years he was engaged in practice, and during that period published in 1843 his Essay on "The Contagiousness of Puerperal Fever."

In 1847 he was appointed to the Chair of Anatomy and Physiology at Harvard University; in 1875 a separate Chair of Physiology was created, and from then on till his resignation in 1882, Holmes held the Chair of Anatomy, and during that period was appointed Dean of the Medical School.

Like Weir Mitchell, Holmes was close on fifty years old before he embarked on his literary career. "The Autocrat of the Breakfast Table" did not appear till 1858.

His first effort in fiction, "Elsie Venner" (1859-1860) is a study in heredity and is full of wise insight. For example:

Relations are very apt to hate each other just because they are too much alike. It is frightful to be in an atmosphere of family idiosyncrasies; to see all the hereditary infirmity of body, all the defects of speech, all the failings of temper, intensified by concentration, so that every fault of our own finds itself multiplied by reflections like our images in a saloon lined with mirrors. Nature knows what she is about. The centrifugal principle which grows out of the antipathy of like to like is only the repetition in character of the arrangement we see expressed materially in certain seed-capsules, which burst and throw the seed to all points of the compass. A house is a large pod with a human germ or two in each of its cells or chambers; it opens by dehiscence of the front door by-and-by, and projects one of its germs to Kansas, another to San Francisco, another to Chicago, and so on; and this—that Smith may not be Smithed to death and Brown may not be Browned into a madhouse, but mix in with the world again and struggle back to average humanity.

His second novel, "The Guardian Angel," appeared in 1867; and his third and last, "A Mortal Antipathy," in 1885, written when he was seventy-five years of age. He died at Boston in 1894.

Sir Henry Thompson (1820-1904).

In 1885, under the pseudonym of "Pen Oliver," appeared "Charley Kingston's Aunt," a novel

which made a great stir when it was published, and is of interest still because it first introduced "amnesia" to the public. The author was Sir Henry Thompson, a famous surgeon who, apart from his medical skill and the writing of this novel, has other claims to distinction. He was a painter of pictures which hung in the Royal Academy, and during nearly forty years was the giver of famous dinner parties known as "The Octaves" from the fixed number of persons who sat down to them—always eight. During the entire series they were held in the same room with the same table and chairs. At these epicurean entertainments the most brilliant men in literature, science, art and politics were brought together. Among the first guests were Dickens, Browning, and Thackeray; King Edward as Prince of Wales came to four. Conan Doyle, whose privilege it was occasionally to attend, says that he never heard more interesting talk than at these male gatherings.

The story of Sir Henry's "best seller" opens in the hospital dissecting room, where Charley Kingston, a medical student, discovers to his utter consternation that the body he is dissecting is that of his own aunt, a lady who, having married against the wishes of her family, had emigrated to America and ceased to communicate with her relations. Having rescued the body, he sets out to solve the mystery of her fate.

He discovers that she was rich and some time previously had come to Liverpool, carrying American bonds to the value of £60,000 in a carpet bag. But she had forgotten what she had done with the bag. She had come into the hands of a general practitioner at Liverpool, who had referred her on to an eminent alienist in Brook Street, London. The alienist found her in a state of mental flurry, unable to remember the name or address of any English relative or friend. The doctor had lost sight of her, but Kingston found it possible to trace her from lodging to lodging till she wanders away from her last, unable to pay her bill, and is finally brought, in an unconscious condition, from a garret in which a poor, but honest woman who had picked her up in the street, had been sheltering her, to die in the Marylebone Workhouse Infirmary.

Silas Weir Mitchell, M.D., LL.D. (1829-1914).

Silas Weir Mitchell won the highest distinction in two very different fields—he was one of the foremost neurologists of his time, he also took a leading place among the American writers of fiction in the latter half of the nineteenth century. His remarkable versatility is illustrated in his achievements; in medical science he was a pioneer noted for his discoveries in the treatment of injuries and disease of the nervous system, and for his physiological work on snake venom and various poisons.

In many fine causes, educational, charitable and scientific, he was a civic leader. Of fiction he was a writer of unusual success. As a poet not so well known, he had a gift of graceful expression.

The son of Dr. John Kearsley Mitchell, a distinguished physician and minor poet, Weir Mitchell was born at Philadelphia, on February 15,

1829. In 1850 he graduated in medicine at the Jefferson Medical School, and later, after some post-graduate work in Paris, settled in practice in his native city, and for the next ten years devoted himself to a growing general practice. The onset of the Civil War in 1862 provided the determining factor in shaping Mitchell's career as a neurologist. A special hospital for diseases and injuries of the nervous system was placed under his control, and provided him with opportunities for study of which he made fine use, so that after the War he became and remained one of the world's leading neurologists.

Believing that a literary career would hinder his progress in medicine, he waited till he was fifty-two years old before publishing his first novel; though his first story dates from 1863 and was inserted in *The Atlantic Monthly* without his name. His last novel, "Westways," was written when he was eighty years of age.

Although his literary works fill some eighteen volumes and are characterized by a fascinating charm and polished style, Mitchell never allowed his avocation to interfere with his more serious duties as a physician. Novel writing and salmon fishing he always spoke of as his recreations.

Sir Ronald Ross, M.D., K.C.B., F.R.S. (Born 1859).

"The Apostle of Tropical Sanitation," Ronald Ross, was educated at Saint Bartholomew's Hospital, entered the Indian Medical Service in 1881, and in 1892 commenced the study of the problem of malaria. The story of his difficulties, disappointments and labour illustrates anew the words of Sterne that "the way to fame is like the way to Heaven—through much tribulation!" Only after long years of courageous effort, incessant trial and failure, and much vexation of spirit did he arrive at his epoch-making discovery, and in modest exultation wrote the charming lines:

This day, relenting God
Hath placed within my hand
A wondrous thing; and God
Be praised, at His command.

Seeking His secret deeds
With tears and toiling breath,
I find Thy cunning seeds,
O million-murdering Death.

I know this little thing
A myriad men will save.
O Death, where is thy sting?
Thy victory, O Grave!

As the result of Ross's brilliant work it was possible to rid the Panama zone of malaria, and to make safe and healthy vast tropical countries. It was fitting that in 1902 he should be awarded the Nobel Prize of Medicine.

Overshadowed by the greatness of his scientific work his other efforts take a minor place, but vast is the range of his intellect. He has produced volumes of verse, mathematical papers, and three novels—"The Child of Ocean," 1889; "The Spirit of Storm," 1896, and "The Revels of Orsera," a mediaeval romance, written in 1895 but not published till 1920.

Sir Arthur Conan Doyle (1859-1930).

Conan Doyle may be truly said to have warmed both hands at the fire of life. All kinds of adventures added spice to a life packed full of human interest and experience. He was a Doctor of Medicine of Edinburgh University, and his medical career included seven months spent as surgeon on a whaler in the Arctic Seas; ship's surgeon on a run to the West Coast of Africa; and eight years in general practice at Southsea. He was novelist, poet and historian; stood for Parliament on two occasions; attained proficiency in many sports, boxing, cricket, billiards, football, aeronautics and skiing; his latter years were largely devoted to the occult.

Born in 1859 at Edinburgh of Irish parentage, he was educated at Stonyhurst and a Jesuit school on the Continent. Thence he proceeded in 1876 to the study of medicine at Edinburgh University, where he graduated as Bachelor of Medicine and Master of Surgery in 1881. In his recollections of student days, he says that the most notable character he met was Joseph Bell, Surgeon at the Edinburgh Infirmary. Bell was a skilful surgeon, but his strong point was diagnosis not only of disease, but of occupation and character. Later, when Doyle turned his hand to the detective story, he thought of his old teacher Joseph Bell—"of his eagle face, of his curious ways, and of his eerie tricks of spotting details. If he were a detective he would surely reduce this fascinating but unorganized business nearer to an exact science." So he wrote a "Study in Scarlet," for the copyright of which Ward Locke and Company gave him £25. After serving as a ship's surgeon, Doyle started practice at Southsea. In the first year he made £154, the second £250, rising slowly to £300, which in eight years he never bettered. He has given in the Stark Munro Letters a description of those years.

In 1890 it was announced that Koch had discovered a certain cure for tuberculosis and that he would demonstrate it on a certain date in Berlin. Doyle felt an urge to go and set out for Berlin. He came to the conclusion that the whole thing was premature, and wrote a warning letter to the press. But that journey was a turning point in his career. Part of the way he had travelled with Sir Malcolm Morris, the skin specialist, and Morris had urged him to give up general practice and come to London, where by practising a specialty he would have time to devote to his writing.

So at the close of 1890 we find Doyle and his family setting out for Vienna, where he spent six months studying ophthalmology.

Coming back to London he took rooms and set himself up as an oculist at Number 2 Devonshire Place, close to Harley Street, hoping that during the early period some of the busy men would refer their refractions to him. But patients came not his way, and the long hours in his consulting room were spent in writing the short stories of Sherlock Holmes. Before long he saw that it was foolish to waste his literary earnings in paying rent for a consulting room, and in August, 1891, he gave up the practice of medicine, only to resume it for a short period in 1900 when he went out to South

Africa as physician attached to the Langman Field Hospital.

Doyle wrote many novels of distinction, stories such as "The White Company," "The Captain of the Pole Star," "Micah Clarke," "Brigadier Gerard."

Though a renegade from the ranks of medicine, Doyle always cherished an interest in medicine and an admiration for its worthy exponents. He concludes one of his medical tales, "The Surgeon Talks," with the words:

And a Doctor has very much to be thankful for also. Don't you ever forget it. It is such a privilege to do a little good that a man should pay for the privilege instead of being paid for it. Still, of course, he has his home to keep up and his wife and children to support. But his patients are his friends—or they should be so. He goes from house to house, and his step and his voice are loved and welcomed in each. What could a man ask for more than that? and besides he is forced to be a good man. It is impossible for him to be anything else. How can a man spend his whole life in seeing suffering bravely born and yet remain a hard or a vicious man? It is a noble, generous, kindly profession and you youngsters have got to see that it remains so.

Richard Austin Freeman (Born 1862).

Unlike Dr. Watson who never completely mastered the methods of his distinguished hero Sherlock Holmes, many medical men like Austin Freeman, who was for some time medical officer of one of His Majesty's Prisons and writes excellent detective stories, now conceive and solve some of the best problems produced in this branch of fiction.

Freeman was student and House Physician at the Middlesex Hospital, qualifying in 1886. His later medical appointments included service as medical officer on the Gold Coast; for a time he was medical officer of Holloway Prison, and he served in the Royal Army Medical Corps during the War.

His "Dr. Thorndyke" is worthy to take his place with his peers—the Sherlock Holmes of Conan Doyle—the Lecoq of Gaboriau.

Many fascinating items of medical evidence are woven into the fabric of Dr. Freeman's stories. The report that a newcomer to the coast of Africa, a fortnight after his arrival, had died of Blackwater Fever arouses his suspicion of a sham-burial. The differential diagnosis of the loss of the little toes of both feet as evidenced in discovered footprints, works down to the conclusion that the suspect suffered from Ainhum and is therefore from a tropical country and probably a dark skinned individual. The skill of Dr. Thorndyke is as ingenious as it is pleasing, and his reasoning is so delicate that one can sympathize with Dr. Jarvis in his frequent inability to fathom the workings of his colleague's mind. If you desire an entertaining and instructive evening, read the stories from the case book of Dr. Thorndyke.

Frank Romer (Born 1871).

The author of "Look out for Squalls," "Tit for Tat," "Numbers Up," and other stories, is a grandson of Mark Lemon, the first editor of "Punch". During the Great War, Romer served as Lieutenant-Colonel in the Royal Army Medical Corps; he is now consulting surgeon to the Jockey Club and

The National Hunt, so, as it would be expected, his novels deal mostly with racing and hunting.

Somerset Maughan (Born 1874).

Unlike Deeping and Young, Somerset Maughan comes of a family of lawyers. For his first novel, "Liza of Lambeth," he obtained his material while working among the poor, as a student at Saint Thomas's Hospital, where he spent five years taking his diplomas, M.R.C.S., L.R.C.P. "I liked treating the people in the out-patient department of the hospital," he once said, "and Liza was inspired by those people. I got to know a good deal about the lives of the people in Lambeth, and I put down the facts quite simply."

With the publication of that story in 1897 came the end of his projected career as a physician, though for a good many years his pen brought him only £100 per year. Luckily he possessed private means or he would have come uncomfortably near starvation.

"Lady Frederick," his delightful comedy which was produced in 1907, made his name and fortune. Mostly known as a playwright, his novels are yet of distinction. In one of his books, "On a Chinese Screen," he has a jibe at the type of honorary medical officer, known to all generations of medical students, who looks on his pupils and patients as butts for his sarcasm and rudeness.

The medical profession, though blest with many virtues, neglects somewhat the amenities of polite behaviour. I do not know whether it is commerce with the sick which gives the doctor an unfortunate sense of superiority; the example of his teachers some of whom have still a bad tradition of rudeness which certain eminent practitioners of the past cultivated as a professional asset; or his early training among the poor patients of a hospital whom he is apt to look upon as of a lower class than himself; but it is certain that no body of men is on the whole so wanting in civility.

Zane Grey (Born 1875).

The famous American author of exciting stories graduated at the Medical School of the University of Pennsylvania, and for six years (1898-1904) practised medicine in New York. Since then he has followed a literary career and is well known as a prolific author of adventurous stories such as "The Spirit of the Border," "The Lost Trail," "Desert Gold," "The U.P. Trail."

Grey's father was a doctor too, though prior to graduating he followed various other occupations as backwoodsman, hunter and farmer.

James Johnston Abraham (Born 1876).

James Johnston Abraham is best known as the author of that wonderfully fascinating book of travel "The Surgeon's Log"; but he has written at least one novel of distinction, "The Night Nurse," an excellent story of hospital life. He holds the degrees of M.A., M.D., F.R.C.S. (England), and is Surgeon to the Kensington General Hospital and the London Lock Hospital.

George Warwick Deeping (Born 1877).

George Warwick Deeping has practised medicine, and his father and both his grandfathers before him were doctors too. Graduating at Cambridge, in

arts and medicine at the age of twenty-five, he practised medicine for only one year. From 1905 when he abandoned medicine for literature, till the Great War in 1914, he produced twenty novels, though he says he began to write, as a medical student, in a Bloomsbury boarding house.

In 1915 he joined the Royal Army Medical Corps and served on Gallipoli up to the evacuation, then in France; his war-time experiences provided him with material for subsequent novels, particularly his admirable story "Suvla John."

The war changed his whole outlook on life. "I came back," he says, "a new man, with bigger and more enthusiasms. I and my inspiration were new. I felt that I had to make a fresh start. I began it over there in France. I scribbled in dugouts, huts and billets."

In August, 1925, came "Sorrell and Son," his most popular novel, to which the screen version has brought added fame. The genesis of the story, as told by Deeping, is worth quoting:

Last year when I was on a motoring tour, I saw Sorrell. There was the man, an hotel porter, delicate, intense, the obvious gentleman doing his job like a gentleman. I wondered why. Hence "Sorrell and Son." I don't suppose the original Sorrell suspects that he gave me a problem and an inspiration. I don't even know his name.

To Warwick Deeping, the profession owes some of the best novels about doctors—stories such as "Sincerity," which breathe a healthy idealism.

Francis Brett Young (Born 1884).

Francis Brett Young also served in the Royal Army Medical Corps during the Great War, his field of service being in East Africa; in "Marching on Tanga" he has given us memorable records of his experiences as soldier and doctor.

Like Deeping, his father, grandfather and a whole company of uncles and granduncles before him had been doctors. Graduating in medicine at the University of Birmingham, he went to sea as a ship's surgeon, in which capacity he learned quite a lot about tramp steamers, knowledge to be used later in his book "Sea Horses." Later he settled down in practice at Brexham in Devon, the scene of which provided the background for the general practitioner in "My Brother Jonathan."

For his "Portrait of Clare" he was awarded the James Tait Memorial Prize. Many of his novels contain excellent studies of doctors, and there is one excellent study of medical student life, but of them all "My Brother Jonathan" has most appeal; it is one of the most enthralling doctor stories ever written.

Henry de Vere Stacpoole.

The author of "The Blue Lagoon," "The Pools of Silence," "The Doctor," and many other works, studied medicine at Saint Mary's and Saint George's Hospitals, and after graduating, practised for some time as a doctor. Stacpoole has travelled widely, and is a Fellow of the Royal Geographical Society. He has published volumes of poetry, and a translation from the French of the Poems of François Villon.

Others less known as F. E. Wynne who wrote "Fortune's Fool," "A Mediterranean Mystery," "Digby's Miracle," and other novels, one might mention; and Will Levinrew, the author of "Murder on the Palisades" and other stories.

Arthur Lynch.

But let us conclude with a reference to Dr. Arthur Lynch, not because he has attained great fame as a novelist (he might have done so had he not made all knowledge his province), but because he is a great and deserving to be better known Australian.

Into a crowded life Lynch has packed more experience than half a dozen other men make their own. He has been soldier, scientist, engineer, doctor, poet, journalist, novelist, traveller, and Member of the House of Commons.

To one episode in his career J. M. Synge, a friend of his Paris days, has inserted an allusion in "The Playboy of the Western World." In the opening scene Christy Mahon is asked: "Or did you go fighting bloody wars for Kruger, young fellow, the like of the man beyond who was sentenced to be hanged, quartered, and drawn?" For Colonel Arthur Lynch, to give him the rank which he held in the Boer Command, fought for the Boers, and upon his return to England after the Peace of Vereeniging was sentenced to death for treason.

Years later he again held the rank of Colonel, but this time in the British Army during the Great War.

Born at Smythesdale, Victoria, he studied engineering at the University of Melbourne, and after graduating, set out for Europe, where he studied for some time at Berlin. Thence to London, where he earned a meagre living by journalism, and for a time was engaged in making references from the continental medical journals for Sir William Gowers. For a week or two he edited an electrical journal, until it collapsed for want of funds. Then he was free-lance till the late Mr. T. P. O'Connor gave him his chance on *The Sun*.

To his part in the Boer War I have already referred, with his subsequent arrest, trial, imprisonment in solitary confinement for a year, and his release due to the intervention of Sir Thomas Lipton with King Edward.

After his release, Lynch graduated in Medicine at Saint Mary's Hospital, London; was elected for an Irish constituency and served for some years in the House of Commons.

During the Great War, Colonel Lynch was wholeheartedly British and was sent over to Ireland to encourage recruiting. Such in brief are some of the main incidents of his life. His novels include "O'Rourke the Great," in which he attempted to give an epitome of the Irish character, "Seraph Wings" and "Approaches"; but they form but a small part of his mental progeny. He has published volumes of poetry, studies in biography and history, scientific volumes, and philosophical and ethical studies, on which the fame of this myriad-minded Australian will eventually rest.

Reports of Cases.

TRICHOMONAS VAGINITIS.

By H. O. LETHBRIDGE, M.B., Ch.M. (Sydney),
Narandera, New South Wales.

TRICHOMONAS VAGINITIS may be unknown to some of us; it was to me till I happened to light on the description in Crossen's work. Its recognition might possibly save us from accusing a virtuous girl of having gonorrhœa. Furthermore, the intractability of this disease to ordinary treatment may make for want of confidence when the patient with this form of vaginitis goes on steadily getting no better. The irritation of the external genitals, the rather profuse yellowish discharge, the sleepless nights, the unpleasant odour and the absence of gonococci in a smear, all together make a picture which is completed by the demonstration of the protozoon. In this, the only case I have diagnosed (possibly I may have missed many), microscopic examination of a smear from the vagina placed on a warm slide with a little warm saline, immediately revealed numbers of these very active protozoa whose movements among the pus cells reminded me of a mouse nosing among bits of cheese.

Thus I wrote in 1927, but I did not forward the report for publication, as I feared that this *trichomonas vaginitis* might not be an entity. Since then I have made many vaginal smears and have found live trichomonads in only three. There are, however, patients whose symptoms lead one to suspect the presence of this protozoon and in whose vaginal discharge one finds many stationary bodies (not epithelial cells) shaped like amoebæ. These may be trichomonads whose motility through some fault in technique is not demonstrated. It is important to know of the occurrence of this form of vaginitis. It is difficult for me to believe that these protozoa are harmless and accidental and not causative agents.

PERFORATION OF THE OESOPHAGUS AND MEDIASTINITIS.

By ERIC W. GUTTERIDGE, M.D., B.S. (Melbourne), F.C.S.A.,
Ear, Nose and Throat Specialist, the Repatriation
Commission, Victoria; Honorary Clinical Assistant
to the Ear, Nose and Throat Department, the
Melbourne Hospital, Melbourne.

Mrs. A., aged sixty-five years, on May 9, 1930, swallowed a fish bone. Attempts at removal caused severe pain, followed by shock and collapse. When first seen by me on May 10, 1930, the patient was seriously ill. There was surgical emphysema of the cervical regions extending to the front of the chest and to the right axilla. There were pain and tenderness and a palpable swelling on the left side about the cricoid cartilage. There was inability to swallow. With the assistance of Dr. Julian Smith I removed a flat bone from the cervical tissues through a large tear in the left pyriform fossa. The oesophagus was not explored. The necessity for an external pharyngotomy was considered, but in view of the patient's long-standing cardiac failure, this was regarded as impossible. Feeding was carried out by the rectum for five days and subsequently by nasal tube. Small amounts of pus appeared from time to time in the mucus constantly expectorated by the patient. There was total inability to swallow for six days. On the tenth day Dr. C. E. Dennis's radiological examination revealed a small fistula from the pharynx at the level of the pyriform fossa with a small button-shaped cavity. There was a shadow of mediastinitis, probably of the posterior mediastinum, reaching down to the level of the seventh dorsal vertebra. There was a periesophageal thickening to the extent of 0.6 centimetre. The oesophagus was narrowed at the level of the crossing of the left bronchus; this was regarded as inflammatory in nature.

Twenty days after the onset the patient began to swallow fluids and there was a gradual return to normal.

The case is of interest in that the abscess in the cervical tissues discharged through the large wound of entry into the left pyriform fossa. The mediastinitis was of an inflammatory nature and apparently did not go on to pus formation. A radiogram of an actual mediastinitis is uncommon—and the patient recovered.

HERMAPHRODITISM.

By C. H. NORTON, M.B., Ch.M.,
Holbrook, New South Wales.

THE following case is reported as a matter of interest, more from its rarity than anything of clinical import.

On November 10, 1930, I attended E.G., single, aged thirty-six years, during her confinement, which was normal throughout. She gave birth to a full-time living hermaphrodite child. At the time, I noticed that the child possessed a penis of normal size and apparently a scrotum. Some hours later, when I had more leisure, I thoroughly examined the child and found the apparent scrotum to be the *labia majora*, which were excessively developed; closer examination revealed a thoroughly developed vagina with the urethra opening out of the penis as in a male. The existence of the testes I am not certain of, but can detect firm bodies, one in each *labium majus*, which I think may be testes. There do not appear to be any distinct signs of leaning towards either sex in particular. The child weighed 2.5 kilograms (five and a half pounds) at birth, is still living, and is apparently going to thrive. The maternal history is peculiar in that this was the fourth conception. The first infant, born some years ago, I understand, lived a week; the second, a few years later, was still-born; the third pregnancy, two years ago, was a right-sided ectopic, which ruptured at the eighth week. The mother is a congenital syphilitic from her father's side, and has probably a well established Neisserian infection. In spite of this, the child appears particularly strong and healthy. I am reporting this case, as I have never previously seen a case of hermaphroditism and think it may be of interest to others.

LEPROSY.

By C. DUGUM, M.A., M.B., Ch.B., F.R.F.P.S. (Glasgow),
Adelaide.

Miss M.M.M., aged fifty-three years, left South Australia for Lautoka, Fiji, on April 9, 1919, and returned in January, 1922. On June 24, 1922, she landed at Goulburn Island, Northern Territory, where she resided as a mission sister for six years. The return to Adelaide in 1928 took four months and was made via Western Australia.

Before leaving the island she thought she had "a scorched place" on the back of her right hand. The skin on the back of the hand did not seem to recover, but she took no further notice of this, "as there was no pain." About May, 1930, when playing the piano, she noticed that the little finger was "numb." Later she suffered acute pain in the right hand and arm, particularly at night; later still she noted that the ring finger and the middle finger had become numb also. In Goulburn Island she was in contact with lepers. She consulted me on October 5, 1930, complaining of the anaesthesia above mentioned; she also had pains in wrists and elbows of some months' duration, and in knees and ankles of two weeks' duration. At night, when she was in bed, her right hand felt hot and full.

Examination revealed anaesthesia of the back of the right hand, of the little finger and less so of the ring finger, and only slight anaesthesia of the middle finger. The ulnar nerve behind the internal epicondyle was definitely thickened. The skin of the back of the right hand felt atrophic. At the junction of that hand and wrist, between the thenar and the hypothenar eminences, there was a red

patch with thickened skin and on the chin was a similar patch.

On November 10, 1930, an examination revealed anaesthesia of the back of the right hand, anaesthesia half way up the back of the right arm, along the ulnar aspect for a distance of 5.0 centimetres (two inches), but not at all along the radial aspect. The little finger was completely anaesthetic, as was the ulnar aspect of the ring finger. The right hand gave the impression of being very stumpy compared with the left, both as to fingers and palm of the hand; the lower part of the right forearm looked thicker than the left. The palmar surfaces of the hand and fingers were shining and the skin felt thinner there than on the left hand. The back of the right hand was shiny. There was a definitely marbled appearance of the little finger and of the two terminal joints of the ring finger of the right hand. There was anaesthesia of the patch on the left hand, but none of the patch on the chin. The patient complained of numbness, but not anaesthesia, of the three smallest toes of the right foot. Since the end of October the patient has been having weekly injections of hydnocarpus oil.

To date every bacteriological test has failed to reveal *Bacillus leprae*. Examination has been made of blood, material obtained from puncture of the ulnar nerve, swabbing from the nose and scrapings from the patches.

The case has been reported to Federal and State Public Health authorities, who in conjunction with me, have examined the patient. She looks well and is sound in all organs. She reports monthly to the Government Laboratory for further bacteriological examination. The case appears to be one of anaesthetic non-infectious leprosy.

According to this patient the treatment of lepers in Goulburn Island is by the raw chaulmoogra oil.

Reviews.

CLINICAL MEDICINE.

It will be agreed by all teachers of medical students that the ideal method of acquiring knowledge of practical medicine is provided when sound clinical work and well directed systematic study proceed simultaneously. Thorough first-hand investigation of the complaints of sick people is of prime importance in the making of an efficient doctor. This is so obvious that any discussion of the point should be superfluous, yet in these days, when so much medical research work (good and bad) is being done and when the curriculum of the medical course is becoming so heavily laden, it is well to draw attention to the principle, however obvious and trite. The proper study of medicine is the study of the patient.

For over twenty years Savill's "System of Clinical Medicine" has been a reliable guide to the principles and practice of the best type of British medicine.¹ In an admirable way it correlates the practical work of investigation and treatment of the patient's complaints with the detailed study of the various diseases. The eighth edition of Dr. Savill's book has recently appeared and it follows the methods elaborated in the first edition, wherein the author stressed "the importance for diagnostic purposes of reviewing the various diseases which might give rise to the patient's leading symptom or symptoms." The student is trained to give proper consideration to the symptoms or effects of the illness and thence to deduce the cause. Savill's was the first British text book of medicine to adopt this method; the same procedure was later followed by Herbert French in his well known "Index of Differential Diagnosis of Main Symptoms."

The book opens with a short chapter on clinical methods. The salient features of case taking are clearly set out. Observation, accurate and complete, is the keynote.

¹ "A System of Clinical Medicine Dealing with the Diagnosis, Prognosis and Treatment of Disease, for Students and Practitioners," by Thomas Dixon Savill, M.D.; Eighth Edition; 1930. London: Edward Arnold and Company. Royal 8vo., pp. 1047, with illustrations. Price: 28s. net.

"*Facies, or External Appearance of Disease*" is the title of the second chapter, which directs attention to the patient's general condition, his attitude and gait and the general conformation of his body. Warning is given against the easy way of "lightning diagnosis."

The routine adopted in dealing with the diseases of bodily organs and systems is illustrated by the subdivisions made in the chapter dealing with the circulatory diseases. Part A treats of symptomatology—"the four cardinal symptoms of diseases of the heart are breathlessness, dropsy, cyanosis and palpitation"—and the causes of these main symptoms are tabulated and discussed. In Part B the author considers physical examination and also examination by the polygraph, electrocardiograph and X rays. Part C groups the diseases according to their prominent features, for example, pyrexia in pericarditis and acute endocarditis, pain in *angina pectoris* and coronary thrombosis, enlargement of cardiac dulness in cardiac hypertrophy and pericardial effusion, altered heart sounds in valvular diseases, and altered rhythm and rate of pulse in auricular fibrillation and heart block. Throughout the book the clinical outlook is preserved and cumbersome statistical tables and intricate pathological details are alike avoided.

In his introduction to the first edition Dr. Savill stated that it is "a standing accusation against medical writers that they are careless in respect of literary style, and I fear I shall not be found an exception. I have striven to be intelligible rather than academic." Perhaps that explanation excuses the statement in the description of Parkinson's disease that "the patient moves like a statue." There really is nothing more constrained than the gait of a statue. However, such criticism, beloved of *Punch*, is almost flippant when applied to this excellent volume.

The edition under review has been revised and much new matter added. Consideration is given *inter alia* to recent work on *achalasia cardia*, the Plummer-Vinson syndrome, coronary thrombosis, nephrosis, "Uroselectan" in pyelography, narcolepsy and pyknolepsy, methods of localization of cerebral and spinal tumours by the aid of "Lipiodol" and encephalography, *cisterna magna* puncture and thallium acetate treatment for ringworm.

What the student must learn is that not every patient complaining of indigestion needs a fractional test meal and an X ray investigation of his digestive tract, nor are catheterization of ureters and a pyelogram required by every man with a pain in the back. The various special and elaborate methods of investigation are extremely valuable, but their general adoption to the exclusion of proper clinical examination of the patient is greatly to be deprecated. In methods of diagnosis and treatment simplicity is a highly commendable quality and one to be assiduously cultivated.

With progress in medicine changes of viewpoint are inevitable. From time to time different aspects in the investigation and treatment of disease become prominent. There are fashions in medicine as in dress. Physical signs, morbid anatomy, microscopical examination of diseased tissues, bacteriology—each in turn has had its day. The present day favourites are biochemistry and X rays. The time has not yet arrived when any of these aids to the efficient practice of medicine can be dispensed with. A due balance, however, must be preserved. With Dr. Savill's book as his guide, the student or practitioner should easily retain that balance in thought and action.

A TEXT BOOK ON INFANT NUTRITION.

For many years Professor Marriott of St. Louis has been a leading authority on infant feeding, with views of his own on many vexed problems. These views are now collected in a text book on infant nutrition,¹ which gives a comprehensive survey of nutritional disorders and of diet

in health. Of particular interest are the chapters dealing with acidified mixtures, carbohydrate addition, concentration of feedings and the treatment of parenteral digestive disturbances.

The first half of the book is devoted to the physiology of nutrition and the dietary requirements of normal infants. Artificial feeding is discussed simply and clearly and with commendable freedom from dogmatism. In balancing the various mixtures described, the gravimetric percentage method of Rotch has been wisely discarded. From both the practical and scientific points of view, Power's method showing the proportion of calories provided by protein, fat and carbohydrate, is preferable and might well have been adopted by the author.

The standards of measurement employed are, in some respects, open to criticism. Whether the tablespoon and teaspoon are half a fluid ounce and fluid drachm respectively is not stated; and the distinction between volumetric and gravimetric is not always clear. Likewise the method advocated of filling the spoon with solids is subject to marked personal variation. Levelling after compression gives the least error. These are points of importance in practice and seldom receive adequate recognition.

In the formula for acid feedings it will be noted that less lactic acid is advised than in Marriott's original papers, when he thought it desirable to counteract completely the buffer action of cow's milk. As Brennemann has suggested, modification of the casein curd may be the more important result of acidification and smaller quantities suffice. As regards the actual proportions of acid to milk, given as drachms per pint, it should be remembered that the American pint is only sixteen ounces—a point seldom, if ever, mentioned in text books. In practice, Marriott uses evaporated milk, which he claims is more digestible than either boiled, Pasteurized or dried milk.

The most significant feature of his feeding methods for normal infants is not acidification, but the use of concentrated mixtures. Corn syrup, which consists largely of dextrin, with smaller amounts of dextrose, maltose and cane sugar, is added in the proportion of one part by weight of syrup to eleven parts of acidified cow's milk. The resultant feeding has a food value of thirty calories per fluid ounce and a 13% carbohydrate content. This is given undiluted and as prepared is readily digestible. Any danger of underfeeding is thereby reduced to a minimum. The possibility of overfeeding with such a mixture, unless adequate supplies of extra fluid are available, should, however, have been stressed. At St. Louis it has given excellent results. In passing, it may be noted that use of the proprietary product "Lactone Syrup" with whole milk, though based on Marriott's preparation, in reality gives quite a differently balanced feeding with a fuel value of twenty-three calories per fluid ounce and 8.5% carbohydrate. To provide equal nourishment with such a mixture, considerably more fat—about 20% more actually—will be taken, with a possibility of fatty indigestion in consequence. This is perhaps more clearly seen if the caloric percentages are worked out, namely:—Marriott's acid milk: Protein, 14%; fat, 33%; carbohydrate, 53%. "Lactone Syrup" with whole milk: Protein, 17%; fat, 40%; carbohydrate, 43%. This caloric comparison is also interesting as regards the protein ratio. Marriott's preparation, although whole cow's milk is used, is not a high protein feeding, though it is frequently thought to be so when only the gravimetric percentages are considered.

Chapter XI provides a good summary of breast feeding. For completeness, reference might have been made to the prenatal care of the mother and the use, on occasion, of massage in restoration.

The last half of the book deals admirably with disorders of infant nutrition and digestion. Especially informative is the article dealing with "common infections associated with nutritional disturbances"—so-called parenteral disorders. The same may be said of the chapter written in conjunction with Hartmann on acidosis and alkalosis. Many other points of practical and theoretical interest occur throughout the book, which can be warmly commended to both students and paediatricians as one of the sanest and most complete yet produced on this subject.

¹ "Infant Nutrition, a Textbook of Infant Feeding for Students and Practitioners of Medicine," by Williams McKim Marriott, B.S., M.D.; 1930. St. Louis: The C. V. Mosby Company. Crown 4to, pp. 375, with illustrations. Price: \$6.50 net.

The Medical Journal of Australia

SATURDAY, FEBRUARY 21, 1931.

All articles submitted for publication in this journal should be typed with double or triple spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction, are invited to seek the advice of the Editor.

STILL-BIRTH AND NEONATAL MORTALITY.

THERE can be no doubt that the health of a community depends primarily on the health of its children. The health of the child depends on the care bestowed on the mother during her pregnancy and on the provision made for the welfare of the child. An infant at birth is wholly dependent on its mother and is extraordinarily susceptible to pathological stimuli. The matter is one of grave concern for health authorities the world over. Antenatal supervision is being more widely adopted both in hospital and private practice, infant and child welfare clinics have been introduced, special branches of governmental health departments have been created, the gospel of health by sunshine, milk drinking, vitamin consumption and other saving remedies has been preached, but still infants die and new means of prevention are sought. In 1928 2,965 babies under one year of age died in the capital cities of Australia, a rate of 53.05 per thousand births registered; 4,124 died in extra-metropolitan areas, a rate of 52.88 per thousand births registered. The percentage for extra-metropolitan areas was higher than that for 1925, 1926

and 1927, but not so high as that for 1924. The percentage for capital cities was lower in 1928 than in any of the other years mentioned. There is thus every reason why Australians should give attention to the subject.

Reports have recently been published of three investigations into neonatal mortality. Two of these have been discussed in these pages; one has not yet been considered. In the issue of February 22, 1930, the report of Dame Janet Campbell on maternal and child welfare in Australia was the subject of a special abstract. Dame Janet concluded that the Governments of Australia must be prepared to expend more money than they are spending on maternal and child welfare, that the money provided should be economically administered, that special departments should be set up and should assume proper responsibility for this branch of public health administration, and that voluntary agencies should be prepared to surrender some portion of their independence. In the issue of November 29, 1930, a long account was given of an investigation carried out by J. N. Cruickshank for the Medical Research Council into neonatal mortality. The points on which emphasis was laid in the conclusions of this investigator were the prevention of accidents incidental to delivery and stricter antenatal supervision, the better instruction of medical students, graduates and nurses, the recognition and treatment of maternal syphilis, the need for increased knowledge of the causes of prematurity, the prevention of infections by improvement in housing and hygiene, the advancement of knowledge of neonatal diseases. The third investigation has been made by the Health Organization of the League of Nations into the "causes and prevention of still-births and mortality during the first year of life." The inquiry was limited to circumscribed areas in Germany, Austria, France, Great Britain, Italy, Norway, the Netherlands, the Argentine Republic, Brazil, Chile and Uruguay. Uniform lines of investigation were followed in these areas and the inquiries were made by children's specialists and general practitioners. In Europe alone 4,966 cases were investigated; these included 3,526 deaths and 1,440

still-births. It was found that there has been a falling off in infantile mortality due to digestive disturbances, infectious diseases and respiratory disorders, but that the rates for still-births and mortality during the first few weeks of life have remained the same everywhere. It is also stated that while the value of certain measures such as infant welfare centres, the supervision of mothers and their infants and the benefits resulting from social legislation have been demonstrated, it has been shown that the provision of these measures in all districts has been inadequate.

When these three reports are examined, the first and most obvious conclusion is that neonatal mortality (the mortality of infants during the first year of life) cannot be considered apart from the supervision of mothers during their pregnancy. A child that is puny at birth, that bears some inherited predisposition to illness, even if it is not already the victim of a latent or actual infection, cannot survive the unequal struggle for existence. It may seem like useless repetition to emphasize antenatal supervision. It has been the subject of innumerable articles and addresses and has been freely discussed. At the same time no one can truthfully affirm that the desired standard has been reached in Australia. If the question of syphilitic infection alone be taken, it will be acknowledged at once that investigation of the possibility of the existence of maternal syphilis is more often than not neglected. Another aspect that demands serious thought at the present time is the food of the mother during her pregnancy and of the child during its first year of extrauterine life. There is at present more real poverty in the Commonwealth than has been known before, and there is every likelihood that many pregnant women will be inadequately provided with the food elements that are necessary to their health and the growth of their offspring. The child after birth will in many instances be deprived of essential accessory food factors. Inquiries are being made into this aspect of the subject and it will be discussed at a later date. In the meantime medical practitioners in their public hospital or private practices should keep

this aspect before them and should emphasize the importance of food quality as well as quantity when they have the opportunity of offering advice in the public or semi-public distribution of rations. Infant welfare centres exist in many parts of the Commonwealth. These are often regarded with distrust by the general practitioner. The latter must recognize that the public health authority has the duty of supervising the health of the community, in particular of its younger members. If the general body of medical practitioners in the past had shown more real concern in the preventive side of paediatrics—in infant welfare work—the public health authority would not find it necessary to extend his activities as he is forced at the present time to do. It may be that occasionally a member of the staff of an infant welfare centre or a baby clinic becomes over-zealous, presumes too much on the knowledge she possesses and interferes between a medical practitioner and his patient. In these circumstances the proper thing to do is to cite the case in all its details to the head of the department. The heads of departments are jealous of the honour and efficiency of their staffs and will see to it that therapeutic exuberance is kept within due bound, if indeed therapy is to be undertaken at all. The welfare centres have come to stay and demand the cooperation of medical practitioners. If cooperation is given, welfare centres will automatically take their proper place in the conservation of the public health. The last point arising from the three reports is perhaps the most important in that it reveals lack of basal knowledge. The causes of premature birth and still-birth remain obscure and demand investigation. This is a field for research with a world wide appeal. The Health Organization of the League of Nations has brought the subject to the fore; in view of the multiplicity of factors to be considered it should act as the coordinating body for such a research. Each centre, however, will have to make its own initial effort. The effort is worth making. The present are days of fewer children; let the medical profession see to it that these are given the best possible start on the journey of life.

Current Comment.

PROGRESSIVE POLYNEURITIS.

MULTIPLE peripheral or disseminated neuritis (polyneuritis) may be caused by chronic alcoholism or may arise from poisoning by lead, arsenic, copper, ergot or other drugs or by the poisons formed by various microorganisms. In many instances the causal factors are not obvious. Recently in the United States of America many hundreds, possibly thousands, of persons suffered from a lower motor neurone paralysis from drinking an extract of ginger as a substitute for alcohol. Investigators considered that the toxic principle was an adulteration-cresol-phosphoric acid ester.

H. H. Hyland and W. R. Russell remark that chronic polyneuritis may rarely progress in a gradual manner and superficially resemble progressive muscular atrophy.¹ In such cases remissions usually occur, but in the example reported by them deterioration persisted and death followed in about a year. The patient was a female and no toxin was discovered as a cause. At the onset there was a curious rash on the face and neck, with severe local irritation preventing sleep. Later the arms felt weak. The muscular weakness became progressively worse and finally the patient became utterly helpless.

The pathological findings showed no gross atrophy, but moderate wasting of muscles. The nerves in the upper limbs were larger than normal. Beyond some bronchopneumonia and partial collapse of the right lung there were no significant lesions outside the nervous system. The thoracic cord was rather softened. The anterior horn cells of the spinal cord were round and shrunken. There was no chromatolysis and no degeneration of the white matter of the cord. The anterior nerve roots, the peripheral nerves and the intramuscular nerves were definitely demyelinated. The posterior nerve roots and the sensory nerves in the muscle spindles were much less affected in this respect. All the peripheral nerves showed proliferation of the interstitial tissue and were infiltrated by mononuclear cells. Many of the cell capsules of the dorsal root ganglia were thickened by proliferation of the capsule cells. The brain was normal.

Peripheral neuritis is often associated with changes in the spinal cord. In the white matter the posterior columns are most often involved. J. C. Cole has stated that if the Marchi method be used, degeneration of these columns is always observed. When changes in the anterior horn cells are found they usually exhibit central chromatolysis with peripheral displacement of the nuclei. Authorities, however, are divided as to the frequency of changes in the spinal cord (white or grey matter) or even the brain being associated with polyneuritis. Although not mentioned by Hyland and Russell, involvement of the anterior cornual cells of the cord

is seen with the polyneuritis of plumbism. In the case described neither brain nor white matter of the cord was affected. The anterior horn cells of the grey matter resembled those in progressive muscular atrophy. In the peripheral nerves the lesions were those of other types of severe polyneuritis. Sensory nerve implication was less than motor.

As regards aetiology, it is suggested that the slow development indicates a continuously acting toxin rather than acute poisoning—possibly an auto-toxaemia. W. Harris described two cases under the name of "slow chronic polyneuritis." One patient had purpuric blotches on the legs, which is significant in view of the integumentary eruption in the case described. Rheumatic fever has been antecedent to some cases. S. Barnes has designated such conditions as "toxic degeneration of the lower neurones simulating peripheral neuritis." He describes bedsores and incontinence, with difficulty in swallowing and speaking. J. Grinker described progressive polyneuritis in a painter who had suffered from colic. Progressive atrophy and paresis of muscles supervened and continued without remission till death occurred in nine months. The autopsy revealed no lesions of the white columns of the cord or anterior horn cells. There was no change in the Nissl bodies. Only the peripheral nerves showed pathological changes.

W. R. Russell and H. G. Garland give an account of progressive hypertrophic polyneuritis with detailed reports of seven cases.¹ In the series described one patient had a definite family history of neurological disorder, eight relatives displaying some disease of the nervous system. The disease may begin in adult life and there may be remissions during its course. The degree of peripheral nerve enlargement may be only slight or very great. Only in a few instances have pupillary abnormalities, nystagmus and kypho-scoliosis been observed. The only features constantly found are muscular atrophy and the remarkable enlargement of the peripheral nerves. The nature of the disease and its connexion with other familial disorders are obscure and the subject of much conflicting opinion. A separate entity, both clinical and pathological, has been ascribed to it by some, but by others it has been considered as a variety of Charcot-Marie-Tooth's disease. In one instance there was a close resemblance to peroneal atrophy, but in this was also the rosary-like enlargement of the nerves considered by Bielschowsky to relate these cases to von Recklinghausen's neuro-fibromatosis, in which disease enlargement of the peripheral nerves is a well known feature. The presence of a definite extensor plantar response in some cases suggests a possible connexion with the familial ataxias. In the series described nystagmus and absence of tendon jerks were present in all cases.

These reports are all of interest and illustrate the difficulty of diagnosis of the *fons et origo mali*.

¹ *Brain*, October, 1930.

¹ *Brain*, October, 1930.

Abstracts from Current Medical Literature.

SURGERY.

Conical Amputation Stump.

GATEWOOD AND MULLEN (*The Western Journal of Surgery*, September, 1930) write concerning epiphyseal growth as a cause of conical amputation stump formation. This occurs especially in children. Conical stumps are most frequently found following amputations below the knee and above the elbow and their occurrence is approximately in inverse ratio to the age of the child. As early as 1859 Marjolin reported a conical lengthening of the fibula in a young girl following amputation of the leg and he subsequently reamputated stumps of the humerus in two instances. Powers reported a number of similar findings. Numerous theories of conical stump formation have been propounded, but the clinical and experimental evidence has been somewhat confusing. Both Marjolin and Powers considered the condition to be the result of physiological growth of the epiphyses. In a previous series of experiments Gatewood and Mullen demonstrated that all longitudinal growth occurred from the epiphyseal cartilage plate and that this could not be changed by the traumatic stimulus of fractures. From their present series of experiments upon rabbits they believe the following conclusions are justified: (i) Conical stump formation following amputation is the result of epiphyseal growth or overgrowth; (ii) while overgrowth may be the result of a compensatory effort on the part of the epiphyseal plate, the trauma of amputation probably is the stimulus; (iii) absorption at the distal end of the stump occurs; growth in length of the stump never occurs from the amputated end, although periosteal proliferation may produce thickening and lateral spicule formation.

Blood Vessel Visualization.

SAITO, KAMIKAWA AND YANAGIZAWA (*The American Journal of Surgery*, November, 1930) describe a new method of blood vessel visualization (arteriography, venography, angiography) *in vivo*. Arteriography, which has not been generally used in practice because of troublesome reactions, is performed with perfect safety by means of the injection of a fine emulsion of iodized oil. This method is valuable in the diagnosis of various circulatory conditions. It has been used to observe the course of arteries when there is fracture or dislocation; to determine the amputation line; to note the site and extent of the collateral circulation after amputation of an extremity; to observe the vascular condition in the extremity in spontaneous gangrene, in tumours of the extremity and after their resection; it has been used for the purposes of arterial encephalography and in the visualization of local blood vessel conditions, as aneurysm, varices and venous valve defects *et cetera*. By use

of this new contrast medium clear, satisfactory roentgenologic pictures are possible. The method has also been employed in pyelography, myelography and visualization of fistulae and articular cavities. For pyelography it is especially valuable because of the low viscosity of the oil, the absence of irritation of the mucous membranes and the strong radioactivity which insures very clear shadows.

Sarcoma of the Stomach.

RIGNEY D'AUNOY AND ADELAIDE ZOELLER (*The American Journal of Surgery*, September, 1930) discuss sarcoma of the stomach. This is a relatively rare neoplasm. It is most generally estimated as forming about 1% of malignant diseases of the stomach and about 0.25% of sarcomata in general. The condition presents no pathognomonic features which would simplify its diagnosis by clinical or laboratory tests. Diagnosis is established only by histological examination of an excised portion of the tumour or of one of its metastases. Clinically and radiologically, gastric sarcoma is most frequently diagnosed as carcinoma or chronic ulcer. It does not appear possible to make a differential diagnosis before operation. While age is not of importance in the differential diagnosis, gastric sarcoma tends to occur in younger individuals than does carcinoma; the average age for the onset of symptoms is 41.6 years for the former and 61.2 years for the latter. The average age at which gastric lymphosarcoma occurs (36 years) is even lower than that at which gastric sarcoma in general first appears.

While the prognosis of gastric sarcoma is poor, it is frequently said to be better than that of carcinoma of the same region; it does not seem to form metastases so readily or at such an early stage of its development. The essential aetiology of these tumours is, of course, unknown. Trauma, preexisting neoplasms of a benign nature and chronic ulcers have been discussed as possible aetiological factors. Lymphosarcomata of the stomach are usually of the infiltrating variety, occur in younger individuals than do tumours of the spindle-celled type, which are more frequently pedunculated. The prognosis of these latter is much better than the former, as their metastases form more slowly and they are more readily extirpated surgically. Three hundred and thirty-five cases of sarcoma of the stomach, including the four herein reported, are recorded in medical literature in the year 1929.

Empyema.

C. A. ROEDER (*The American Journal of Surgery*, March, 1930) describes a method of using gauze packing in the surgical treatment of empyema of the pleural cavity. He claims that this method has given success over a period of many years. He notes the following advantages: (i) The lung is held steady following operation; (ii) the exudate is cleared rapidly from the walls of the cavity; (iii) the numerous small abscesses which are often present in the periphery of the

lung are broken up; (iv) at the end of forty-eight hours external purulent drainage almost ceases; (v) the method causes obliteration of the cavity, at least as rapidly as any other method. The chief disadvantage is that the gauze must be changed daily and for this light anaesthesia may be required for the first few days. The author resects about ten centimetres (four inches) of the selected rib, then employs a suction apparatus through a stab wound in the pleural cavity. The pleura is then incised and the edges sutured to the skin. The cavity is swabbed out and uniformly packed with gauze treated with bismuth and iodine. The author claims that the patient is more comfortable because of the prevention of an increased pulse and respiration rate. The daily packings are done between broad retractors. The pack is rarely needed after seven days, while purulent drainage usually ceases by the fourth day. He allows his patients out of bed by the third or fourth day. Five cases are reported from his series of eight cases. In each one the temperature fell to normal within three days after operation. A period of five days was the longest after operation during which purulent exudate continued; without exception the patients were walking about within ten days.

Tuberculosis of the Kidney.

HERMAN L. KRETCHMER (*The American Journal of Surgery*, August, 1930) draws some conclusions from a study of 221 cases of tuberculous disease of the kidney, including only those with full case records from among his series. In regard to frequency of occurrence he quotes Wildbolz's series of 2,345 *post mortem* examinations performed in six years at the Pathological Institute in Berne, Switzerland, where tuberculous foci in the kidney were found present in 5.3%. In this same group the lungs were tuberculous in 20.7% of cases. In his study the author draws attention to the history of previous tuberculous disease. Of his patients 43.5% gave a history of some sort of previous operation; 48% of these had had an operation for tuberculous disease. As regards age incidence, 56% of the cases in this series occurred between the ages of 30 and 39 years. While the ages varied from seven to sixty-nine years, the great majority of patients were in the "twenties." The sexes were approximately equally affected. The author stresses the difficulty of determining whether the disease be confined to one kidney. He outlines the history of one patient, a male aged eighteen years, who had repeated examinations made from the apparently healthy kidney. Repeated guinea-pig tests were made, but the animals did not become infected. However, the patient died of tuberculous meningitis three months after the removal of the affected kidney; at the *post mortem* examination a very small tuberculous lesion was found in the remaining kidney. It is difficult to be certain that the opposite kidney is quite healthy in most of the cases of

apparently unilateral disease. However, tuberculosis of the kidney is a slowly progressive disease and very little harm can be done by awaiting the results of one, two, or even three complete urological surveys. In the author's series forty-one patients were affected bilaterally, but he regards these figures as indicating a minimum incidence, because it is relatively easy to miss a small focus that may be present at the time the patient is being examined. He believes that the number of instances of bilateral disease will be greatly increased as more accurate methods of diagnosis are discovered. Each patient is submitted to a routine of radiological examination of chest and genitourinary tract. In 180 of the author's patients there was evidence of involvement of the lungs in 35·5%. In order to have a good functional result following nephrectomy, treatment must be carried out before there is much destruction of bladder function.

The Operative Treatment of Embolism of the Lungs.

A. W. MEYER (*Surgery, Gynaecology and Obstetrics*, May, 1930) describes his technique of the operation for embolism of the lungs with a report of its successful employment in three instances. Since Trendelenburg in 1908 proposed that pulmonary emboli should be removed from the pulmonary artery, the operation had until recently been successfully performed in only one instance, reported by Kirschner. The author points out that all patients lying inactive in bed for some time are liable to pulmonary embolism, whether they are in surgical or medical wards. The decision when to operate is difficult. Sometimes one can wait, but often the decision must be made with lightning rapidity and the operation performed immediately. The decision must be made only when it is certain that the patient will die if left. The operation recommended by Trendelenburg in 1908 consists of a T-shaped incision, resection of the second rib, laying bare the pleura, section of the cartilage of the third rib and incision of the pericardium. A sound is then passed behind the great vessels at the base of the heart and a rubber tube is drawn through and pulled forward to strangle the vessels. This strangulation must not be maintained for longer than forty-five seconds. After incision of the pulmonary artery the emboli are extracted, a clip is then placed on the pulmonary artery so as to bring together the edges of the incision, which is then sutured over the clip. The author's first unsuccessful operation showed him that the opening of the pleura added a great shock to the already stricken heart, that a modification of the Trendelenburg sounds and clip was necessary and that the strangulation period of forty-five seconds was too long and induced paralysis of the respiratory centre. He devised an extrapleural approach and modified the pulmonary artery clip and the Trendelenburg sound. The next two patients on whom this

modified operation was performed, recovered. The first was a patient aged fifty-four years. Pulmonary embolism occurred six days after a gynaecological operation. Operation was commenced almost immediately, emboli were removed from the right branch of the artery; the patient showed signs of distress and the slit in the artery was closed with the finger and thumb, whilst the rubber tube was relaxed and blood allowed to circulate through the artery. This was rapidly followed by improvement, and some large emboli were then removed from the left branch. The heart stopped beating. The pulmonary artery clip was rapidly applied and after gentle massage the heart recommenced its action. By the time the skin was being sutured the patient had recovered sufficiently to cry out with the pain. A week later a second successful operation was performed on a woman aged sixty years, who was apparently dying of pulmonary embolus following an operation for a gangrenous appendix. This patient died a month later from a new embolus. The technique of the operation is described. After removal of part of the second and third ribs the pleura is pushed aside and the pericardium opened low down and the incision enlarged with the fingers. The further steps are similar to the Trendelenburg operation, though particular stress is laid on the manipulation of the rubber tube placed around the origin of the great vessels. In the third successful operation attention to this detail reduced strangulation to a minimum and respiration, though feeble, did not cease for a minute. Since the demonstration of this operation in 1926 two Swedish surgeons have published successful results. The author then describes a fatality due to injury of the heart by the Trendelenburg sound. He describes a further modification of the method of exposure, which he proposes to adopt in the future. Greater exposure of the sternum will be made, a Doyen raspator introduced at the sternocostal junctions of the second and third ribs in order to make extra-pleural resection of these ribs simpler and easier. With a large bone forceps three nips about 0·5 centimetre broad will be made in the sternum after the deep surface has been cleared. The remaining steps will be unaltered. The author thinks that opening the pleural cavity and prolonged strangulation of the vessels are the two chief causes of failure of the operation.

A Transverse Incision for Appendicectomy.

A. J. COKKINIS (*The Lancet*, December, 1930) recommends a transverse incision for approaching the appendix, particularly when the appendix is iliac in position or when there is an iliac abscess. In cases without abscess an incision from 3·75 to 7·5 centimetres (one and a half to three inches) in length, is made horizontally and just in front of the anterior superior iliac spine. The fibres of the aponeurosis of the external oblique

muscle, which run in the same direction as the wound, are split and then the fibres of the internal oblique and transverse muscles, which also run horizontally at this site, are dealt with in the same manner. It may be necessary to avoid the ilio-hypogastric nerve, which pierces the internal oblique muscle about 2·5 centimetres (one inch) in front of the anterior superior iliac spine. The peritoneum, which here is a very definite fold, is exposed and incised horizontally. The caecum can be delivered easily and an adherent subcaecal, retrocaecal, retrocolic or ileal appendix can be delivered more easily than when a more medial, oblique or vertical incision is used. The author remarks that the appendix is in one of these positions in 68% of cases. The appendix is removed, the deep muscles approximated with a mattress suture, the aponeurosis sutured and the skin wound closed. The author advocates that a pelvic appendiceal abscess should be opened by way of the rectum. For the treatment of iliac abscess the operation should be performed as described above, but the peritoneum, instead of being opened, is stripped off laterally until the abscess can be felt from behind; it is then opened with a finger or sinus forceps and a drainage tube inserted, no attempt being made to remove the appendix. The advantages claimed for the method are that it gives the easiest possible approach to the caecum, when this organ is not bound down in the pelvis; that it causes less damage to the abdominal wall; that as all the muscles are split in the same direction, much better exposure is obtained; that the incision, being horizontal, results in an almost imperceptible scar; that it can be very rapidly performed, and that its advantages in the treatment of iliac abscess are great, as the peritoneal cavity is not opened.

Periarterial Sympathectomy.

RENÉ LERICHE AND RENÉ FONTAINE (*Revue de Chirurgie*, July and October, 1930) give an account of the treatment by periarterial sympathectomy of two patients suffering from ulceration due to irradiation by X rays. In both instances the ulcers were on the hands. Periarterial sympathectomy of the brachial artery was performed with success in both instances. In the first case the ulceration had been of very long duration. The literature is reviewed and in all, including the two cases mentioned, twenty-seven cases have been reported. In twelve patients the condition was completely cured by periarterial sympathectomy, in seven it was improved and in eight there was no improvement. In conclusion, the authors state that periarterial sympathectomy cures the pain, sterilizes the ulcer, improves the blood supply and converts the ulcer by degrees from a callous ulcer into a healing sore. They recommend skin grafting (of the type "dermoepeptique de Davis"), which hastens the cicatrization and results in a permanent cure with firm skin. This they consider the method of choice.

Special Articles on Diagnosis.

(Contributed by Request.)

XXXIII.

THE EXANTHEMATA.

THE two important members of the group of exanthemata, so far as this country is concerned, are morbilli (measles) and scarlatina (scarlet fever). The risk of an outbreak of variola (small pox) is an ever-present one and warrants the inclusion of its consideration in this article, while the two "little sisters," varicella or chicken pox and rötheln or rubella will be mentioned briefly in connexion with the diagnosis of the more important diseases.

Of the five, four are so similar in their behaviour and characters that it may be presumed they belong to the same family. They are small pox, chicken pox, measles and rubella. Scarlatina stands alone, bearing no close relation to the other four.

Preliminary Observations.

A few preliminary observations on the four first named will clear the position and make the consideration of diagnosis easier, while also narrowing down the field to some extent.

(1) In none of them has the causative organism been discovered.

(2) To all of them the great majority of the population is susceptible, in the sense that the great majority of persons, given reasonable exposure, will in due time develop the rash proper to the disease. This does not, of course, mean that any attacked person who fails to develop a rash has found it unnecessary to "put up a fight."

(3) One definite attack of any one of these four diseases, in the vast majority of cases, will confer complete protection for life. For over twenty years I have been looking, with an open mind, for an undoubted instance of a second attack of measles or chicken pox and though a fairly large number has been submitted to me for an opinion, I have never been able to satisfy myself of one. My experience of small pox has been small, but the analogy is there and I suggest that of the small number of second attacks mentioned, the majority are not genuine.

(4) In all four there is a long and fairly constant incubation period, the period which may be taken as the normal incubation period for all infections to which the body has not already been sensitized. The preeruptive period of illness varies; for purposes of comparison the incubation period is best calculated as being from the date of infection to the date of skin eruption. In small pox and measles this is usually fourteen days but occasionally may be rather longer or shorter. In chicken pox and rubella the average time is rather longer. In a series of several hundred cases of chicken pox I found the eruption appearing almost as commonly on the seventeenth day as on the fourteenth and have noted it even later.

(5) There is no carrier problem. For practical purposes, carriers of the causative organisms of these four diseases do not exist.

When therefore we are confronted with a sick person who may be suffering from or developing one of these four diseases we have the following important items of knowledge to help us.

(a) If, for example, it is definitely known that the patient has previously had a definite attack of measles, the present illness is not measles. Even if all the classical symptoms are present, the case should be viewed with grave doubt; careful observation for a day or two will almost invariably reveal that the provisional diagnosis of measles was wrong. I have seen a large number of such cases.

(b) If a patient is obviously "sickening," and ten days or so previously was in contact with, let us say, measles, a provisional diagnosis of measles can be made and pre-

cautions taken. There are pitfalls here. For example, I have seen once small pox which had been diagnosed as measles. The doctor's definite diagnosis of measles had been made largely on the ground that a fortnight previously there had been contact with a person affected by a rash, treated as measles. He said, "Oho, measles!" when he might have said, "Oho, small pox!"

(c) This is the most valuable point of all: For any person to be developing a measles or small pox rash today he must have been, ten days or a fortnight ago, in a position to get measles, or small pox. If he were not, the present illness is not measles, or small pox. A timber splitter from the bush is sent to a city hospital. Whatever his illness is, it is not small pox. If the patient be a ship's passenger from Noumea or Colombo, his illness may be due to small pox. These are extreme examples, but in this regard, consideration must be given to every doubtful case. In the same way measles can be frequently eliminated.

Small Pox.

The diagnosis is to be considered under the following headings: "The Invasion Stage"; "The Papular Stage"; "The Later Stages."

The Invasion Stage.

At the onset small pox may be mistaken for any of the acute fevers, but above all, for influenza. The backache, fever and great prostration make it likely that in this country, in the absence of any suspicion of exposure to small pox, in the vast majority of instances the condition will be diagnosed as influenza. No means exists of distinguishing them at this stage of the illness.

If a prodromal rash is present, this may possibly be mistaken for the rash of scarlet fever or measles, but not of rubella, on account of the severe symptoms. The absence of sore throat, tonsillar exudate and enlarged glands and the patchy distribution of the rash will exclude scarlet fever. The absence of catarrhal symptoms, of stomatitis and of Köplik's spots, will exclude measles.

The Papular Stage.

In the papular stage small pox is most often mistaken for measles. The similarity may be striking. In both illnesses the rash appears early on the face and is maculopapular in character to begin with. In small pox the rash appears most often on the third day and in measles on the fourth day—quite a close enough similarity. In both there has been, a fortnight or so earlier, a similar case in the family or neighbourhood. It is not surprising therefore that the thought of small pox does not enter the mind and a diagnosis of measles is made. I would say that the chief difference is that the small pox patient is very ill and the measles patient very uncomfortable. In measles severe enough to warrant the error in diagnosis, catarrhal symptoms and signs, especially conjunctivitis, have been present for some time and the remains of Köplik's spots may still be seen. In small pox the eruption is profuse on the forearms, in measles these parts are probably not yet affected at all. One may possibly find on the palate an early small pox vesicle which settles the diagnosis.

If a patient who has been considered as influenzal has been treated medicinally for the fever and pains, for example, with salicylates, the ensuing rash may be regarded as a drug rash instead of a small pox eruption. The distribution of the small pox rash, described later, is a valuable guide.

The Later Stages.

In the later stages, the vesicular, pustular and crusting lesions of small pox may be mistaken for syphilides, drug rashes, and, most especially, for varicella (chicken pox). The chicken pox lesion is superficial, appears, lives and dies within a short period of a few hours to a few days, is unilocular and fragile and does not cause scarring unless it be scratched and consequently infected. The small pox lesion is deep, involving the deeper layers of the skin, consequently it is multilocular and its healing results in

scar formation. It grows and develops slowly, becoming vesicular in about two days and pustular in two or three days more. The distribution of the rash is very important. Small pox is only likely to be mistaken for chicken pox if it is mild; even in a severe case of chicken pox with many lesions, the symptoms are not likely to be severe enough to make one suspect small pox. In border-line cases the distribution differences are sufficient to be the deciding factor.

Small pox affects principally the parts subjected to exposure, friction, pressure or any form of irritation. Thus the hands, forearms, face and neck, and the shoulders and buttocks where they have been subjected to pressure by lying in bed bear a profuse crop of lesions, the chest and abdomen scattered lesions and such parts as the axilla and popliteal areas few or none. A baby is likely to be badly affected in the perineal region, groins and buttocks, especially if neglected in the febrile invasion period. Chicken pox affects essentially the skin of the trunk, less of the head, face, shoulders, buttocks and thighs. The forearms and legs are usually only slightly affected. It may almost certainly be said: "If the lesions are more numerous on the forearms than on the chest or abdomen, the diagnosis of small pox should be made; if not, chicken pox." Natives of tropical countries, sailors *et cetera* of course present modifications of the normal distribution.

The vaccinal history of the patient should be considered. A history of repeated successful vaccinations is evidence against small pox; one vaccination only, performed many years previously, may result in a modification of small pox similar to alastrim.

Lastly, the small pox eruption is all complete in two days; it is then entirely papular, later, entirely vesicular. The chicken pox spots come out in successive crops for some days and owing to the rapidity of their development and death, lesions in all stages may be observed side by side. I may mention that I have very frequently seen the prodromal rash of varicella diagnosed as scarlet fever.

Measles.

As a rule there is very little difficulty in the diagnosis of measles. The differences between mild and severe infections are in degree, not in kind and no disease runs truer to type. Even when there is exanthem without exanthem, or exanthem without exanthem, the disease, more often than not, can be recognized without difficulty. In the stage of exanthem the most common error is to mistake measles for laryngeal diphtheria. This is, of course, when the cough is definitely croupy, with or without dyspnoea and particularly if there is little or no conjunctivitis or photophobia. Rhinorrhœa may be present in either disease. Köpilk's spots may always be seen at this stage in this type of measles and a search for them should prevent any mistake. I have often seen the spots merely as pearly or whitish specks, without the red surrounding area described in text books as characteristic.

In the eruptive stage measles may be mistaken for small pox, though the converse is more usual, as earlier stated. The only other conditions to be considered are rubella and various drug, serum, toxic and dietary rashes.

So far as the patient is concerned, the diagnosis of rubella from measles is of little importance. Any attack of measles mild enough to be mistaken for rubella is unlikely to cause more than a temporary inconvenience. But it is often important and always desirable to know whether any patient has previously had measles and if possible a definite pronouncement should be made in all cases. To my mind rubella simulates scarlatina more often and more closely than it does measles. In rubella the prodromal catarrhal signs are very slight and Köpilk's spots are absent. Even when the temperature is high the patient is not ill and rarely uncomfortable. Severe cough and bronchitis are practically never present. The rash is lighter and pinker than that of measles and more closely packed and uniform; there is no hemorrhagic staining. At the time the rash comes out the occipital and posterior cervical glands are enlarged in most instances, sometimes other superficial glands are also enlarged.

The various other rashes, drug, food and serum, are sometimes uncommonly like that of measles. It must always be remembered that a patient with symptoms similar to those of early measles will commonly have taken medicines capable of producing morbilliform rashes. Among these are salicylates, antipyrine, chloral, quinine and iodides. Some of the most typical "measles" rashes I have seen were produced by copaiba. Most serum rashes are urticarial and itchy; measles rashes never are. Rashes caused by soap enemas are usually scarlatiniform and the various "toxic" rashes erythematous and patchy. There is a tendency in text books to dismiss lightly the diagnosis of these eruptions from measles and scarlatina, with the statement that in them catarrhal signs are absent, or, when distinguishing them from scarlatina, that sore throat is absent. This is all very well, but it is not always so. With them there may be an exanthem, similar to the measles or scarlatina exanthem; if it is present it will produce symptoms similar to those of a measles or scarlatina exanthem of similar intensity and situation. The conjunctiva, nasal passages, pharynx and larynx may be affected. However, in the majority of instances there is an exanthem only, and only occasionally does it very closely simulate that of measles.

Scarlatina (Scarlet Fever).

Scarlatina differs radically from the other exanthemata. It has a short incubation period, an attack of the disease does not confer immunity and we have the spectacle of a large number of cases of intermittent and chronic infection and of carriers. These facts are all correlated, just as the converse facts are correlated in the other exanthemata. When we understand the true and full meaning of the matter, we shall know all that there is to be known about infection.

Streptococcus scarlatinae is the principal, if not the only cause of the disease; without it scarlatina cannot occur. We have then to include consideration of all phases and varieties of infection by this organism and not only those against which the body defences have failed, that is, those characterized by fever, angina and exanthem. Not one of these features is essential, as I for one stated many years ago, long before the identity of *Streptococcus scarlatinae* was established. The rash in scarlet fever is an effect strictly comparable with the membrane in diphtheria; there are hosts of cases of scarlet fever without a rash, just as there are hosts of cases of diphtheritic infection, especially of the nose, without the formation of a membrane.

The diagnosis of ordinary scarlet fever with exanthem can be determined by clinical means; that of recurrent and chronic infection by clinical and bacteriological means; that of carriers, unfortunately, only by inference and bacteriological means. Fortunately the true scarlatina carriers are of little importance, just as are the carriers of diphtheria.

Typical scarlet fever, when the rash is at its height, presents a very striking and characteristic appearance. As with measles, the differences between a severe and a mild infection are in degree, not in kind. The rash may be simulated by the prodromal rashes of chicken pox and small pox and of course by rashes caused by drugs, enemata, sera *et cetera*, but none of these produces the combination of sudden onset, angina, fever and rash.

The scarlet fever rash is a red punctate erythema, affecting the trunk and limbs, not the face, and often not the palms and soles. Where it is present it is fairly uniform, but rather more pronounced round the shoulders, hips, elbows and knees. A sharply marked area of circumoral pallor is very often present in children and the cheeks are brightly flushed. In adults there is often a slight appearance of the rash on the face and in adults and older children it often has a morbilliform character on the extensor surfaces of the limbs. Typical scarlet fever cannot be mistaken for measles, but if it is mild its appearance often approximates closely to the scarlatiniform variety of rubella; the presence of the rash on the face in the latter disease is a very helpful feature.

Atypical rashes causing difficulty in diagnosis are really not common; it is more often the absence of other signs, such as angina, that causes the trouble.

The throat symptoms in scarlet fever are caused partly by the inflammation in the infected tonsils and partly by the exanthem. The tonsils may be swollen, inflamed and painful and covered with exudate and the exanthem on the palate and tongue may be seen to be comparatively slight; on the other hand, the tonsils may be clean, not swollen, but sharing a bright redness with the remainder of the throat, palate, tongue and lips. Generally if there is a bright exanthem, there is a bright exanthem. A provisional diagnosis of early scarlet fever, before the exanthem appears, may be made in the case of any acute fever with or without exudative tonsillitis, on the evidences of the tongue appearances and the presence of a bright red punctate rash on the palate. Antitoxic serum could be given, but the final diagnosis had better wait.

A fading or faded rash of several days' duration may present some difficulty, but here the appearance of the tongue is of much greater value than in the early stages. A fading scarlatiniform rash, a red or dirty throat and a peeled tongue, present a very strong combination. I have frequently known medical practitioners to be misled at this stage of the disease by the appearance of desquamation on the face. This is quite common, even when there has been no visible rash there.

It is usual to include in text-books the question of diagnosis of scarlet fever from scarlatiniform rashes following infection of burns, operation wounds, the puerperal uterus *et cetera*. Why? I fail to see that it makes any difference whether the point of origin of infection be the tonsil, the skin, or the uterus. The infecting agent may be a scarlatiniform streptococcus or another streptococcus, or a staphylococcus for that matter. If the illness is caused by the *Streptococcus scarlatinae* it is scarlatina, if caused by some other organism it is not. The identification of the *Streptococcus scarlatinae* is another story.

The Dick and Schultz Charlton tests have a limited value in the diagnosis of scarlet fever in the early stages, provided serum has not been administered. The reactions are very beautiful and dramatic when successful, but the absence of reaction is misleading and confusing. There are too many sources of error and doubt.

The retrospective diagnosis of scarlet fever is not always easy, but nephritis, arthritis, otitis, adenitis or even tonsillitis or persistent rhinorrhœa and a history of recent rash are highly suggestive; if flaky desquamation is present on the palms or soles, or pinhole desquamation elsewhere, the evidence is conclusive. If no rash, desquamation or other stigmata are present, is there any way of determining whether any of these troubles is scarlatiniform in origin? A history of scarlet fever in another member of the family or a close associate, would be strong evidence in favour of scarlatina, but the recovery of *Streptococcus scarlatinae* is the absolute evidence that is needed and this raises the question of the identification of this streptococcus. This is by no means easy and takes some time; it is quite out of the question for the work to be undertaken in general practice. A detailed discussion of the matter, though it is one of the most fascinating subjects imaginable, is outside the scope of an article of this nature, which already is unduly long. I would suggest: (i) That when haemolytic streptococci are obtained from scarlatina contacts suffering from otorrhœa, rhinorrhœa, or tonsillitis, their illness should be regarded quite definitely as scarlatiniform; (ii) that, even if no history of contact be established, the patients suffering from otorrhœa and rhinorrhœa should be regarded with the gravest suspicion and isolated and that the patients suffering from tonsillitis should be fully investigated.

To prove that an individual is a true carrier is a long and tedious business and, as it is more than likely that he will have become non-infective before the investigations are completed (the vast majority are temporary carriers only) it is hardly worth while considering it here, or attempting to carry it out in practice.

FRANK V. G. SCHOLES,
M.D. (Melbourne), D.P.H. (Cambridge),
Medical Superintendent, Infectious
Diseases Hospital, Fairfield, Victoria.

British Medical Association News.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been nominated for election as members of the New South Wales Branch of the British Medical Association:

Child, Alfred George, M.B., B.S., 1928 (Univ. Sydney), 19, Ramsay Street, Haberfield.
Hunt, Elinor Sydney, M.B., Ch.M., 1926 (Univ. Sydney), 132, Victoria Street, Ashfield.
Pottinger, George Wilfred, M.B., B.S., 1929 (Univ. Sydney), 29, Tunstall Avenue, South Kensington.

Medical Societies.

THE MEDICAL DEFENCE SOCIETY OF QUEENSLAND.

THE ANNUAL MEETING OF THE MEDICAL DEFENCE SOCIETY OF QUEENSLAND was held at the British Medical Association Building, 35, Adelaide Street, Brisbane, on December 11, 1930, DR. A. B. CARVOSSO, the Vice-President, in the chair.

An apology was received from the Honorary Treasurer, Dr. A. H. Marks.

The Death of John Espie Dods.

The Chairman made feeling reference to the sad death of the President, Dr. J. Espie Dods, which had occurred on December 6. In moving a motion of condolence to his wife and family, the Chairman said that Dr. Dods had been President for many years and his loss to the Society would be irreparable. The motion was carried in the usual manner.

Minutes.

The minutes of the previous annual meeting were read and confirmed.

Annual Report of the Council.

The annual report of the Council for 1930 was adopted on the motion of the Chairman, seconded by Dr. H. S. Waters.

Membership.

The membership of the Society is now 386. During the year 30 new members were elected and two members rejoined. The losses have been as follows: Resigned 1, left State 1, deceased 1, membership lapsed, owing to subscriptions being outstanding for over two years, 6. The Council regrets to record the death of Dr. Henry L'Estrange of Brisbane.

Office Bearers and Council Elected for 1930.

President: Dr. J. Espie Dods.

Vice-President: Dr. A. B. Carvooso.

Honorary Secretary: Dr. Neville G. Sutton.

Honorary Treasurer: Dr. A. H. Marks.

Auditor: Mr. A. E. Suffolk (A.C.A. Aust.).

Councillors: Dr. W. N. Robertson, Dr. Kerr Scott, Dr. A. G. Anderson, Dr. D. A. Cameron, Dr. Wilton Love, Dr. R. G. Quinn, Dr. S. F. McDonald.

Medico-Legal.

Seven cases have been referred to the Council during the year. Three of these were from members whose hospital appointments had been terminated in accordance with their agreements, and therefore no action could be taken. One case was referred by a non-member which, of course, could not be dealt with by the Society. Of the remaining cases, two of them are still pending, but it is not likely that further action will be taken in either of them, and the Society was successful, through its solicitors, in arranging a favourable settlement on behalf of a member in connexion with a dispute which arose regarding a matter of commission on the sale of a practice.

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Assets.

The total assets of the Society now amount to £3,320 8s. 10d., the balance of the accumulation account for the year being £396 0s. 5d. The total expenditure was £52 2s. 11d.

(Signed) A. B. CARVOSSO,
Vice-President.

Financial Statements.

The financial statement and balance sheet were presented and adopted on the motion of the Chairman, seconded by Dr. W. N. Robertson.

Election of Office Bearers.

Dr. Wilton Love and Dr. Kerr Scott, the retiring members of Council, were unanimously reelected. Dr. H. S. Waters was unanimously elected a member of the Council.

Mr. R. G. Groom, Chartered Accountant (Aust.), was elected Auditor of the Society.

**THE ASSOCIATION OF PHYSICIANS OF AUSTRALASIA
(INCLUDING NEW ZEALAND).**

DURING the past two years discussions have taken place among physicians from Sydney, Melbourne and Adelaide as to the advisability of forming an interstate association having for its object the advancement of internal medicine. It was felt that such a body should be modelled closely on The Association of Physicians of Great Britain and Ireland which is purely scientific in its scope and engages in no medico-political activities. There was, from the outset, general agreement as to the desirability of forming such an association, but certain practical difficulties presented themselves. These have now been satisfactorily overcome and The Association of Physicians of Australasia (including New Zealand) has been formed.

The objects of the Association, as set out in its constitution, "shall be the advancement of internal medicine and the promotion of friendship among physicians." To these ends it is proposed to hold meetings in the capital cities twice yearly. For the present most of these meetings will be held in Sydney and Melbourne, but at the discretion of the Council of the Association a meeting will take place from time to time in Adelaide. Apart from the formal business necessary for the conduct of the Association the whole of the time available at these sessions will be devoted to scientific communications by members and by visitors. It is expressly stipulated that scientific communications shall be spoken, not read, and that no such communication shall last longer than thirty minutes except by special leave. No reporters will be present and no report of the proceedings will be sent to the press, lay or medical. Members can, of course, publish their communications individually in whatever journals they choose.

The qualifications for membership are set out by the constitution as follows: The Association "shall consist of Ordinary Members, not more than ten Associate Members resident in New Zealand, and Honorary Members. It shall at first contain not more than seventy Ordinary Members who shall be physicians actively engaged in the teaching of medicine, men of distinction in medicine and the allied sciences and physicians recognised by the Council as eligible."

At the first annual general meeting held in Sydney on November 30, 1930, the following office bearers were elected:

President: Sir Richard Stawell.

Honorary Secretary: Dr. S. V. Sewell.

Honorary Treasurer: Dr. S. O. Cowen.

Members of Council: Dr. C. B. Blackburn, Dr. E. W. Fairfax, Dr. A. W. Holmes à Court, Dr. H. H. Turnbull, Dr. K. Hiller, Dr. C. T. Ch. de Crespigny, Dr. S. A. Smith, Dr. H. J. Ritchie, Dr. L. S. Latham, Dr. M. D. Silberberg, Dr. C. H. Kellaway, Dr. F. S. Hone.

Sir Henry Maudsley and Dr. R. Scot Skirving have, in recognition of their great services to Australian medicine, been elected honorary life members of the Association.

Post-Graduate Work.**POST-GRADUATE COURSE IN ADELAIDE.**

THE Adelaide Permanent Post-Graduate Committee announces that a post-graduate course of instruction will be held in Adelaide during 1931, providing sufficient applications for membership are received. It is proposed to hold the course during the week commencing May 25. This will enable members to attend the Listerian Oration which will be delivered by Sir Charles Martin on May 28. Two other evening lectures will be delivered by a visitor from Melbourne. The course will consist almost entirely of clinical and technical demonstrations at the Adelaide Hospital, the Children's Hospital and the Queen's Home. Details of the programme will be published in a later issue of this journal. The fee for the course will be two guineas, but those who wish to attend the special lectures only may do so on payment of a fee of one guinea. It is hoped that the course will be as well attended by members of the South Australian Branch as was last year's course.

Correspondence.**THE TREATMENT OF DIFFICULT LABOUR IN
GENERAL PRACTICE.**

SIR: I wish to comment on two papers which appeared under the above caption in THE MEDICAL JOURNAL OF AUSTRALIA on January 3, 1931. I may say at the outset that this wish was given rise to by the following statement in Dr. Cherry's paper: "I have heard of men who use forceps in almost every case in which the child was not born before their arrival. This is, of course, almost criminal and entirely unnatural." Dr. Cherry should know that there is a steadily growing number of obstetricians who conscientiously adopt this practice, and whose results are beyond reproach; his description of the practice as "almost criminal" is therefore an insult to a number of serious, careful and honourable practitioners. With their own excellent results before them they would be perfectly justified in describing as "criminally conservative" obstetrical practitioners who permit occipito-posterior and breech presentations to progress so far as to be beyond correction, and there is little doubt that it is "sound" conservatism that contributes most of these happenings.

I should like to endorse Dr. Cherry's concluding sentiment: "Attend each and every mid. with the same apprehension of possible danger no matter what your experience" and may I add: "Do not let your conservatism become a cloak for carelessness and neglect, remember that every case is a possible mal-position, therefore treat it as a probable mal-position, and if it be, correct it before it be too late to do so."

I particularly like Dr. Cherry's expression the forceps "acting as a guide rather than as a tractor." I cannot agree that it is wise to attempt to feel for an ear without rupturing the membranes. I would not doubt Dr. Cherry's ability to do so without disastrous results, but it would be a very dangerous thing to teach; the risk of separating the placenta and of causing haemorrhage must be very great; for unless one invert the membranes, which would rupture them as soon as much pressure were put upon them, one would have to pass the examining fingers up between the membranes and the wall of the uterus.

The statement that he does not pull the head right through the cervix, would appear to contain the evidence that though Dr. Cherry understands and is not afraid of manual dilatation in its earlier stages (*vide* preceding paragraph) he fails to understand the correct procedure once the forceps have been applied. Under no circumstances, except those brought about by previous neglect, and calling for hasty delivery, should the head be pulled

through the cervix. If the cervix be not yet fully dilated, and it has been decided to assist delivery, the head should be brought down till the external os is within reach of the fingers of the other hand. The cervix should now be carefully massaged and slowly peeled back over the head, as it softens and dilates under the massaging.

I should like to compliment Dr. Riddell on his attitude towards forceps and pituitrin, and particularly I like his expression on the use of forceps "regarded as a surgical operation"; too often they are the instruments of convenience or desperation. I cannot agree, however, that he is right in removing them as soon as the head reaches the perineum. If he will at this stage take off the axis traction handle, turn his patient on to her back, and then, grasping the forceps handles, exercise gentle traction in such direction as though it were his wish to lift the patient off the bed and up, towards the head of the bed, he will find the head rotate forward much sooner than it would otherwise do, and he will save perinea that would otherwise be ruptured. Of course the anaesthetic contributes to this happy result by abolishing terror and reducing the strength of the secondary pains.

I would emphatically protest against the suggestion contained in the paragraph at the foot of page 11, that occipito-posterior positions should be given time to rotate. The pain and suffering entailed in the long wait serve no good purpose, for during this time there is no effective dilatation of the cervix, moulding of the head or softening of the perineum. At the end of a long wait it may be and often would be that manual rotation is called for, and in a percentage of the cases, too large however small, the head will engage so far that the infant will have to be delivered in the bad position, to the probable destruction of the cervix and/or perineum.

A diagnosis of normal or abnormal position can only be made by feeling for an ear; this diagnosis should be made as early as possible, and, if the position can be improved, the improvement should be made at once; there can be, in my opinion, no justification for delay in correcting a mal-position once it is diagnosed, and there should be no delay in making the diagnosis.

Dr. Beard announces himself a champion of the sound and conservative attitude of the British practitioners of midwifery, and in his opening paragraph indicates that he is himself one of these. He said the commonest cause of the failure to correct a breech presentation was the existence of a frank breech and that such were better left alone. Were he not so soundly conservative he would have turned these cases before they got into such a lamentable position. I would not wish to appear sarcastic at Dr. Beard's expense. Whilst standard text books admit such things as the various breech presentations and occipito-posterior presentations and their delivery as such, as normal or subnormal permissible happenings, none of us is blameworthy for feeling unashamed at their inclusion in our records. But I say emphatically that they are avoidable and should be regarded as disgraceful blots on our records.

Dr. Beard's method of removing the adherent placenta by twisting, instead of carefully feeling for the adherent patch and peeling it off, is not one that should be generally adopted.

Returning to Dr. Cherry, his objection to delivery before head moulding has taken place is an apparently sound objection to a procedure which I commonly adopt. I believe the factor which obviates the accidents that might have been expected is one that must be placed to the credit of Dame Nature and the infant and not to my exceptional skill, as my colleagues kindly contend. I am convinced that the head moulds as rapidly as the moulding forces are brought to bear.

In conclusion may I compliment Dr. Steel on his management of the head over the perineum, and ask him to test the method I have outlined above.

Yours etc.,

H. LEIGHTON KESTEVEN, M.D.

Bullahdelah,
January 5, 1931.

INTERNATIONAL NEUROLOGICAL CONGRESS.

SIR: I have been asked to undertake the organization of an Australasian Subcommittee of the British Organizing Committee of the International Neurological Congress, which will be held at Berne, Switzerland, from August 31 to September 4 next.

Already twenty-four countries are represented on the Permanent Committee of Organization. Sir Charles Sherrington is Vice-President, representing Great Britain; Sir James Purves Stewart, Chairman, and Dr. S. A. Kinner Wilson, Senior Secretary, of the British Organizing Committee.

The Congress will be essentially neurological in character, but psychiatric conditions which have a somatic basis may be discussed. The programme will include the following subjects:

1. Diagnostic and therapeutic procedures (surgical and otherwise) in brain tumours.
2. Muscle tonus, anatomy, physiology and pathology.
3. Acute non-suppurative infections of the nervous system.
4. The rôle of trauma in the production of nervous symptoms.

The question of the foundation of an international neurological association will be discussed at the Congress.

Will any of your readers who are interested in this matter kindly write to me at the undermentioned address, and I will be glad to supply them with further details.

Yours, etc.,

RALPH A. NOBLE.

143, Macquarie Street,
Sydney.

January 15, 1931.

SPIKED BY A PLATYPUS.

SIR: A lad fishing in the Yarra caught a platypus which had taken the bait. He took some time to extract the hook which had pierced its bill and the animal was quite quiet while he was so doing. When he, holding it in the palm of his hand, placed it at the river's edge, it dug its hind claws, one into the fourth interdigital space and the other about the centre of the wrist. I saw him twenty minutes after. His hand was very swollen, tense and hot, the forearm up to the elbow was moderately so. He had some pain in the axilla especially at one spot.

He stated that directly after the puncture his hand became quite numb in the vicinity of the puncture, "like a local anaesthetic." No bleeding came from either point; a little stuff oozed from the wrist puncture on pressure. Next morning there was still some swelling of hand and forearm and a slightly swollen gland could be felt in the axilla.

He had a restless night and in the morning complained of a dull pain in the epigastric region. I was glad to get an assurance from Dr. Burnet that no harm would probably ensue as the condition when first seen was quite alarming. He stated that the male has a poison gland at the base of the central spine of each hind claw.

Yours, etc.,

W. KENT HUGHES.

22, Collins Street,
Melbourne,
January 19, 1931.

PERTUSSIS.

SIR: I would like to express my appreciation of the article by Dr. Luxford Meagher on the diagnosis of whooping cough, which appears in the issue of January 24. There can be no question of the value of a differential count in early cases. However, as I served a long apprenticeship in the country where differential counts are not as easy to obtain as they are in the city, my thoughts turn to the practitioner in the country and I wonder if there is any

purely clinical sign by which he may diagnose even the majority of the early cases of pertussis.

Dr. Meagher quotes Osler as not being very helpful, as follows: "A persistent paroxysmal cough without sufficient signs to explain it *et cetera*." I know that that one remark of Osler has been of the very greatest help to me and it may be so to others. I know that if the chest of a child suffering from pertussis be examined immediately before or after a paroxysm numerous fine râles will be heard, but if one allows a little time to pass and the effects of the paroxysm to wear off, as it were, the chest, even to a very careful examiner, may appear quite normal. Now a persistent paroxysmal cough due to the vast majority of the other causes of such a phenomenon, is accompanied by chest or throat signs which give some indication of its nature. This is not the rule in the early uncomplicated case of pertussis. The picture I have in mind of the early case of pertussis is of a persistent, paroxysmal cough of a violent type for which there is no explanation whatever to be found in the chest, provided the examination be not made immediately a fit of coughing has taken place.

It is the absence of chest signs which has always struck me as being so very often noticed and which may give one the first indication of this distressing disease. I do not for one moment mean that other means of diagnosis should be neglected, but I think that a more general appreciation of the one point I have endeavoured to stress in this letter would lead to the earlier diagnosis of more cases of pertussis.

Yours, etc.,

INGLIS ROBERTSON.

135, Macquarie Street,
Sydney,
January 25, 1931.

PULMONARY TUBERCULOSIS IN CHILDREN.

SIR: I have been interested to read Dr. Wilfred Evans's letter in this week's MEDICAL JOURNAL OF AUSTRALIA. Our difference of opinion depends on the distinction between tuberculous infection and tuberculous disease. Where does the former cease and the latter begin? Frankly, I do not know. I realize the absurdity of regarding all children who give a positive response to the Mantoux test as suffering from tuberculosis. When, however, symptoms of ill health exist in the child who reacts to tuberculin and the said ill health cannot be ascribed to any non-tuberculous pathological process, I consider it right to regard the tuberculous infection as an active focus of disease with possibilities of spreading, and to keep the child under close observation.

Yours, etc.,

R. L. THOROLD GRANT

219 North Terrace,
Adelaide,
January 20, 1931.

SUPERANNUATION SCHEME FOR DOCTORS.

SIR: At a recent meeting of the medical profession of Tamworth, New South Wales, the question of a superannuation scheme for medical practitioners was discussed. It was felt that the benefits of a superannuation fund should be available to men and women engaged in medical practice.

It is a well recognized fact that a very large percentage of medical men live up to the greater portion of their income and find it difficult to make adequate provision for their old age. The numerous calls on and the necessity for the Medical Benevolent Society is evidence enough for this fact. After a life of strenuous work most men in other walks of life are enabled to retire at or about the age of sixty years on a pension or a competence amassed in their business and spend the autumn of their life in reasonable comfort and quietness, free from business worries. This, however, for the reason stated above, is denied to a very large number of the medical fraternity, who are forced, through lack of means, to carry on and to die in harness.

In order to live in reasonable comfort one needs an annual income of about six hundred pounds. It is a common practice and, I think all will agree, a laudable one to provide for one's surviving dependants by life assurance. This, however, will not materially assist the aim stated above. In order to assure an income of six hundred pounds *per annum* by means of assurance, one would need a policy with bonus worth ten thousand pounds, which could be invested say at six *per centum* interest. An endowment policy to cover this taken out at the age of, say, thirty years and maturing at sixty would cost according to the appropriate table offered by one of the leading insurance companies of Sydney, over one hundred and sixty pounds. This amount is too heavy a load for any young man to pay as insurance premium even in the most prosperous times. Group assurance, according to a table offered by a prominent life assurance company in Sydney, provides a more economical and cheaper method of making the provision mentioned above. Even this scheme would not be wholly suitable as all the proponents must be first class lives.

It therefore appears that if a scheme similar to the superannuation scheme in existence in the Public Service, some of the banks and insurance companies, could be inaugurated, its benefits would be readily appreciated and almost universally availed of.

It may be argued that the success of the superannuation schemes mentioned above depend, in no small measure, on the subsidy supplied by the Government, the banks or insurance companies, but if a moderate entrance fee assessed in proportion to the member's age was collected for a few years, the fund would soon be on a sound financial footing. Another point which might be raised is that one member might desire to assure for a greater amount. This could be managed on the unit system prevailing in some of the existing funds. The fund could be made to pay, say, six hundred pounds at sixty years of age, annually, or a smaller amount to the widow or dependants. These details would, of course, have to be worked out by a committee assisted by experts.

A big factor in the evolution of such a scheme would, of course, be the management. I understand that several reputable life assurance companies would be willing to undertake the management of the fund. If the local branches of the British Medical Association considered that the management of such fund was outside the province of the Association, they could at least appoint suitable officers to supervise the scheme.

I am certain that the possibility of such a scheme has occurred to many of your readers and I feel certain that the fund would only need to be established and it would be extremely popular and almost universally availed of.

Thanking you, Sir, for the opportunity of bringing this matter before the profession.

Yours etc.,

KEITH J. B. DAVIS.

Tamworth,
February 4, 1931.

A VENIN FOR THE TREATMENT OF EPILEPSY.

SIR: I shall be much obliged if any of your readers can supply me with information regarding a venin put up by Fitzsimons, Port Elizabeth, South Africa, and used in the treatment of epilepsy.

I have not been able thus far to discover any medical man who has used it for this purpose, despite the assertion of the owner that it is being extensively tried in Australia. Mr. Fitzsimons also claims that it is being extensively tried in various mental institutions in South Africa. As I have at present an epileptic patient who is quite determined to try this remedy, I should be obliged if any of your readers could furnish me with particulars of any results obtained by them.

Yours, etc.,

F. ALDERSLEY WOOD.

Leongatha,
Victoria,
January 30, 1931.

THE WAR AND SIR NEVILLE HOWSE'S PART THEREIN.

SIR: Your correspondent, Dr. J. W. Springthorpe, may possess a dubious title to sign himself Lieutenant-Colonel, A.A.M.C., but obviously he is no soldier, otherwise he would have emulated Joe's example as recorded in the following dialogue from *London Punch* (November 26, 1930):

First Gent: "You was a long time in France, Joe, why don't you write a war book?"

Second Gent: "No! I was only a soldier. I did all my grousin' in the trenches."

Yours, etc.,

ROBERT FOWLER.

85, Spring Street,
Melbourne,
February 4, 1931.

Obituary.

ARTHUR ALPHONSUS O'LEARY.

WE regret to announce the death of Dr. Arthur Alphonsus O'Leary, which occurred on February 12, 1931, at Darlinghurst, New South Wales.

DAVID THOMAS.

WE regret to announce the death of Dr. David Thomas, which occurred on February 15, 1931, at Manly, New South Wales.

Corrigendum.

OUR attention has been drawn to an error occurring in the paper entitled "The Selection of an Anæsthetic," by Dr. Leo Doyle, appearing in THE MEDICAL JOURNAL OF AUSTRALIA on February 14, 1931. At page 196 "Percain" is stated to be a "quinine derivative recently introduced by Bayer." "Percain" is a product of the Society of Chemical Industry in Basle, Switzerland.

Medical Appointments.

Dr. W. J. Long (B.M.A.) has been appointed a Resident Medical Officer at the Adelaide Hospital, South Australia.

Dr. J. W. Mason (B.M.A.) has been appointed Government Medical Officer at Tumut, New South Wales.

Dr. A. A. Benham (B.M.A.) has been appointed a Resident Medical Officer at the "Mareeba" Babies' Hospital, South Australia.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xvi.

NATIONAL ASSOCIATION FOR THE PREVENTION AND CURE OF CONSUMPTION: Technician.

PUBLIC SERVICE COMMISSION, ADELAIDE, SOUTH AUSTRALIA: Junior Resident Medical Officer, Surgical Registrar.

SAINT VINCENT'S HOSPITAL, SYDNEY, NEW SOUTH WALES: Honorary Vacancies.

THE BRISBANE AND SOUTH COAST HOSPITALS BOARD, QUEENSLAND: Honorary Clinical Assistant.

THE WOMEN'S HOSPITAL, SYDNEY, NEW SOUTH WALES: Resident Medical Officer.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino, Leichhardt and Petersham. United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company, Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Members desiring to accept appointment in ANY COUNTRY HOSPITAL, are advised to submit a copy of their agreement to the Council before signing, in their own interests. Brisbane Associated Friendly Societies' Medical Institute. Mount Isa Hospital. Mount Isa Mines.
SOUTH AUSTRALIAN: Honorary Secretary, 207, North Terrace, Adelaide.	All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

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